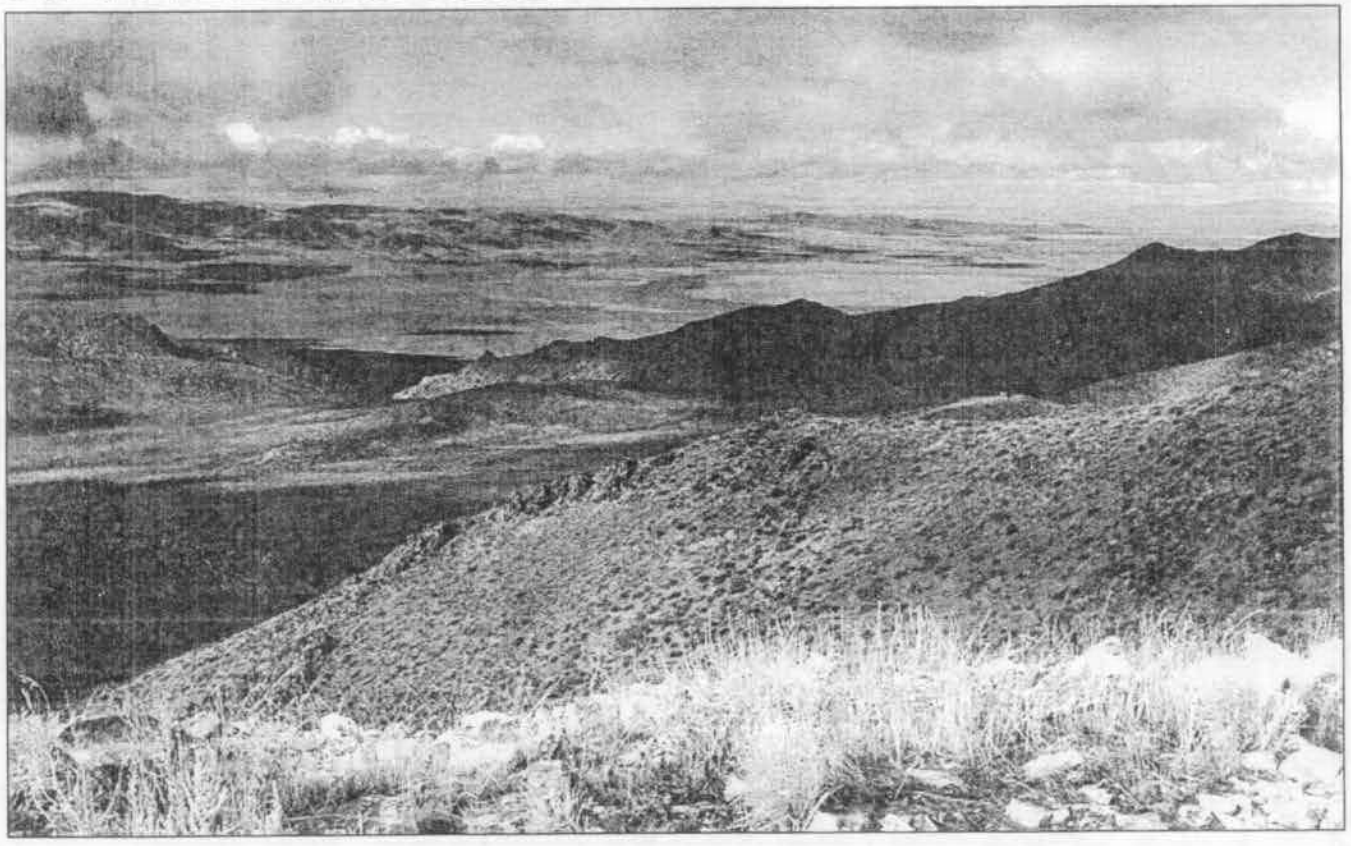
FINAL ENVIRONMENTAL IMPACT STATEMENT



PROPOSED FALLON RANGE TRAINING COMPLEX REQUIREMENTS
NAVAL AIR STATION FALLON, NEVADA

January 2000

Department of the Navy
Naval Air Station Fallon
Fallon, Nevada

Bureau of Land Management
Carson City Field Office
Battle Mountain Field Office

NAS FALLON MISSION STATEMENT

To provide the most realistic integrated air warfare training support available to carrier air wings, Marine air groups, tenant commands and individual units participating in training events including joint and multinational exercises, while remaining committed to its assigned personnel. In support of these critical training and personnel requirements, NAS Fallon will continually upgrade and maintain the Fallon range complex, the airfield, aviation support facilities and base living/recreation accommodations, ensuring deployed unit training and a local quality of life second to none.

BLM MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific and cultural values.

BLM/CC/PL-00/005+1791

January 2000

Dear Reader:

Enclosed for your review and comment is the Final Environmental Impact Statement (Final EIS) for the Naval Air Station Fallon's proposed Range Training Complex Requirements prepared jointly by the U.S. Department of the Navy (Navy) and the Bureau of Land Management (BLM) Carson City and Battle Mountain Field Offices.

The Draft EIS was distributed on August 13, 1999 to agencies and the public for a 60-day review and comment period, ending on October 13, 1999. As requested by the public, the comment period was extended to November 12, 1999. The response to all comments received on the Draft EIS precedes the appendices within this Final EIS.

A 30-day review period follows the date of publishing of the Notice of Availability (NOA) by the Environmental Protection Agency (EPA) in the Federal Register. At the end of this review period, a Record of Decision (ROD) will be issued. Questions or comments should be directed to: Terri Knutson, Navy EIS Project Manager, Bureau of Land Management, Carson City Field Office, 5665 Morgan Mill Road, Carson City, Nevada, or telephone at (775) 885-6156, fax at (775) 885-6147, e-mail at tknutson@nv.blm.gov.

R.ADM T.R. Beard, Commander
Naval Strike and Air Warfare Center, Fallon

John Singlaub, Manager
Carson City Field Office

Enclosure

Final Environmental Impact Statement (EIS)
Proposed Fallon Range Training Complex (FRTC) Requirements
Naval Air Station (NAS) Fallon, Nevada

Lead Agencies:	US Department of the Navy and Bureau of Land Management (BLM)
Cooperating Agencies:	US Fish and Wildlife Service, US Forest Service, Federal Aviation Administration, Bureau of Indian Affairs, Yomba Shoshone Tribe, Fallon Paiute-Shoshone Tribe, Walker River Paiute Tribe, Nevada Division of Wildlife, Eureka, Lander, and Churchill County Commissions, and Kingston Town Board
Title of Proposed Action:	Final Environmental Impact Statement for Proposed Fallon Range Training Complex Requirements, NAS Fallon, Nevada
Affected Jurisdictions:	Churchill County, Eureka County, Lander County, Mineral County, Nye County, Washoe County, Nevada
Designation:	Final Environmental Impact Statement

ABSTRACT

The Naval Strike and Air Warfare Center (NSAWC) at NAS Fallon, Nevada, has evaluated the existing NAS Fallon training assets. NSAWC has compared the assets against Navy tactical aviation training objectives to determine changes necessary at the FRTC to meet mandated training requirements. These proposed changes are evaluated in this EIS. Because actions would occur on lands administered by both the Navy and the BLM Carson City and Battle Mountain Field Offices, this EIS has been prepared by the Navy and the BLM as joint lead agencies. None of the actions would increase the current lateral boundaries of airspace, withdraw more public lands, increase the total number of aircraft operations, or increase the size of the impact areas on the training ranges.

Under the proposed action evaluated in this EIS, the Navy would develop electronic warfare sites on public and Navy-administered lands, four tracking instrumentation subsystem remote sites on public lands, fiber optic cable routes from the air station to the B-16 and B-19 training ranges, and helicopter gunnery ranges on B-17 and B-19. The Navy also would utilize Navy-administered lands in Dixie Valley for close air support training, revise the operating hours of the Reno Military Operations Area, and raise the ceiling of restricted area airspace to allow for high altitude weapons delivery training at B-17 and B-20. Actions on public lands would require rights-of-way from the BLM. This EIS analyzes the potential environmental impacts from the proposed action, three alternatives to the proposed action, and the no action alternative on land use, airspace use, biological resources, geology, soils, and mineral resources, water resources, cultural resources, Native American religious concerns, visual resources, environmental justice and socioeconomics, recreation, grazing and wild horse and burro management, air quality, noise, and public safety and hazardous materials. This EIS also evaluates the potential cumulative effects of proposed and reasonably foreseeable actions. No significant impacts have been identified.

For Further Information:

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January 2000

EXECUTIVE SUMMARY

INTRODUCTION

The Naval Strike and Air Warfare Center (NSAWC) at Naval Air Station (NAS) Fallon, Nevada, proposes to implement changes at the Fallon Range Training Complex (FRTC) to meet Chief of Naval Operations-mandated training requirements resulting from the real world threat environment. The training requirements have undergone independent validation by the Institute for Defense Analysis (IDA), performed under contract to the Bureau of Land Management (BLM) (IDA 1999). The proposed changes would allow the Navy to update and consolidate Navy training on public and Navy-administered lands and to update existing airspace overlying these lands. Changes include developing new fixed and mobile electronic warfare (EW) sites, developing new tracking instrumentation subsystem (TIS) sites, developing additional targets at B-17 and B-19, laying fiber optic cable to B-16 and B-19, utilizing Navy-administered lands in Dixie Valley for close air support training, performing Hellfire missile and high altitude weapons delivery training at B-17 and B-20, and implementing changes to special use airspace. This environmental impact statement (EIS), which has been prepared pursuant to and in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations on implementing NEPA (40 CFR 1500-1508), Navy guidelines (OPNAVINST 5090.1B), and BLM guidelines (BLM Handbook H-1790-1), evaluates the potential environmental and socioeconomic effects of implementing these changes.

Because proposed actions would occur on lands administered by both the Navy and the BLM Carson City and Battle Mountain Field Offices, this EIS has been prepared by the Navy and the BLM as joint lead agencies. Several federal, state, and local agencies with special expertise or administrative responsibilities pertaining to the proposed geographical areas involved have agreed to serve as cooperating agencies, including the US Fish and Wildlife Service (USFWS), the US Forest Service (USFS), the Federal Aviation Administration (FAA), the Bureau of Indian Affairs (BIA), the Yomba Shoshone Tribe, the Fallon Paiute-Shoshone Tribe, the Walker River Paiute Tribe, the Nevada Division of Wildlife (NDOW), Eureka, Lander, and Churchill County Commissions, and Kingston Town Board.

LOCATION OF NAS FALLON AND THE FRTC

NAS Fallon is in the Lahontan Valley of Churchill County in west-central Nevada, approximately 70 miles east of Reno and six miles southeast of the city of Fallon. NAS Fallon administers approximately 7,872 acres of withdrawn and acquired land associated with the air station and 234,124 acres of land associated with the FRTC. The FRTC includes four geographically separate training ranges (B-16, B-17, B-19, B-20), three Range Air Surveillance System (RASS) sites, a tracking system (tactical aircrew combat training system [TACTS]), a threat simulation system (EW area), and special use airspace. The FRTC airspace overlies portions of Washoe, Lyon, Churchill, Pershing, Mineral, Nye, Lander, and Eureka counties. Most of the lands under

the FRTC airspace are public lands administered by the BLM.

SUMMARY OF ALTERNATIVES INCLUDING THE PROPOSED ACTION

The proposed action evaluated in the EIS is the implementation of actions to meet tactical and strategic training mission requirements. These training mission requirements result from the fact that current threat scenarios are geared more toward containing short-fused regional conflicts against undefined enemies with unconventional weapons and sophisticated air defense systems than toward large-scale operations. NAS Fallon and the FRTC were originally configured to train against the threat presented by only a limited number of superpowers. With the breakup of the Soviet Union and the availability of modern military equipment for purchase by any funded entity, more countries now have sophisticated military capabilities. As conflicts become smaller and more compact, the US military must train for such military operations as surgical strikes and no-fly zone enforcement. In addition to training ranges for ordnance training, these operations require small land-based training sites spread out over a larger area to provide flexibility in training for mobile threats. These operations also require higher ordnance delivery training altitudes. The changes proposed in the EIS would allow NAS Fallon to train against these new threat scenarios.

Three action alternatives to the proposed action were identified for detailed review. A no action alternative also is evaluated. For the proposed action and action alternatives, measures would be employed to reduce the level of impact to the environment. These measures are standard to Navy developments and are required by the BLM for actions taken on public lands. In addition, BLM would issue site-specific terms and conditions for rights-of-way grants.

After reviewing input received on the Draft EIS from federal, state, and local governmental agencies and the public, Alternative II has been selected as the Preferred Alternative in this Final EIS.

Proposed Action (Four Valleys-Fixed)

Under the proposed action, the following actions would be implemented:

- Four fixed EW sites would be developed on public lands in Edwards Creek Valley, Gabbs Valley, Smith Creek Valley, and Big Smoky Valley. Three fixed EW sites would be developed on Navy-administered land in north Dixie Valley, at B-19, and at B-20. An existing EW site on public land in the Dixie Valley, EW-10, would be enlarged to approximately four acres. Up to 15 mobile sites would be developed on Navy-administered lands in the Dixie Valley.
- Four 16-foot by 16-foot TIS sites would be developed on BLM-administered lands. TIS-37 would be developed on a peak south of the highway across from New Pass; TIS-45 would be developed on a peak north of Railroad Pass on the east side of the Smith Creek Valley; TIS-47 would be developed south of Hickison Summit between Big Smoky and Monitor Valleys; and TIS-49 would be collocated on one of two existing communication sites north of Mt. Moses in north Dixie Valley.
- Live mortar ranges and helicopter ordnance and gunnery targets would be developed at B-17, and a rough terrain helicopter gunnery target would be developed at B-19.
- Fiber optic cable would be run from the NAS Fallon air station to the B-16 and B-19 training ranges.
- The Navy would perform close air support training, including laser spotting, on Navy-administered lands in the Dixie Valley.
- The Navy would perform Hellfire missile training and high altitude weapons delivery training at the B-17 and B-20 training ranges (new restricted area airspace would be developed above existing restricted area airspace to 35,000 feet above mean sea level [flight level (FL) 350] to accommodate high altitude weapons delivery training).

- Adjustments to special use airspace would be made to change the use times of the Reno MOA from 10:00 AM to 6:00 PM, Tuesday through Saturday, to 8:00 AM to 6:00 PM, Monday through Friday.

Alternative I (Four Valleys-Fixed and Mobile)

Alternative I would include the same actions described for the proposed action except that the fixed EW sites on public lands would be reduced in size, EW-10 would be reduced in size, and the smaller fixed EW sites in the eastern valleys would be supplemented with four or five mobile EW sites up to one-third acre per site in each valley for a total of 18 mobile sites.

Alternative II (Two Valleys-Fixed and Four Valleys-Mobile) (Preferred Alternative)

Alternative II would include the same actions described for Alternative I except that two 5.7-acre fixed sites would be developed on public lands in Edwards Creek Valley and Gabbs Valley, and no fixed EW sites would be developed in Smith Creek Valley and Big Smoky Valley. To compensate for the lack of fixed EW sites in these two valleys, fixed communication relay towers on one-tenth acre of land would be developed. Five mobile EW sites would be developed in each valley for a total of 20 mobile sites.

Alternative III (Four Valleys-All Mobile)

Alternative III would include the same actions described for the proposed action except that no new fixed EW sites would be developed on public lands. To compensate for the lack of fixed EW sites in the four eastern valleys, one fixed communication hub on one-tenth acre of land would be developed in Smith Creek Valley, three combination fixed communication hubs/mobile EW sites would be developed in the other valleys (one site per valley), and 19 mobile EW sites would be developed (up to five sites per valley). An all mobile scenario may provide increased flexibility in training; however, communication technology is not yet advanced or readily available to allow NSAWC to implement an all mobile alternative at this time. Under Alternative III, the Navy would request a ceiling of 30,000 feet MSL (FL300) for new restricted area airspace instead of a ceiling of 35,000 feet MSL (FL350).

No Action Alternative

Inclusion of the No Action Alternative is prescribed by the Council on Environmental Quality regulations and serves as a benchmark against which federal actions can be evaluated (40 CFR 1502.11[d]). Under the No Action Alternative, no new EW sites, TIS sites, B-17 and B-19 target improvements, or fiber optic cable routes would be developed. Airspace changes, Hellfire missile training, and high altitude weapons delivery training would not occur. Present training activities would continue under existing conditions.

ENVIRONMENTAL ANALYSIS

Affected Environment

The existing environmental and socioeconomic conditions are presented in Chapter 3 of the EIS as the basis for identifying and evaluating environmental impacts resulting from the alternatives. The primary region of influence described in Chapter 3 includes the portions of Churchill, Mineral, Nye, Lander, Pershing, and Eureka Counties where actions are proposed.

The environmental analysis focuses on those resources potentially affected by the proposed action and on topics that have received public concern. Those resources include land use, airspace use, biological resources, geology, soils, and mineral resources, water resources, cultural resources, Native American religious concerns, visual resources, environmental justice and socioeconomics, recreation, grazing and wild horse and burro management, air quality, noise, and public safety and hazardous materials.

Environmental Consequences

The environmental consequences analysis uses the existing environmental conditions described in Chapter 3 and the No Action Alternative as the baseline for assessing the magnitude of change for each alternative. Detailed analyses of potential effects to resources are presented in Chapter 4. A summary of potential impacts to each of the various resources is provided below.

Proposed Action

Land Use. No significant impacts to land use. Approximately 76 acres of public land would be

disturbed at four fixed EW sites (including access roads and powerlines), one expanded EW site, and four TIS sites; 26 acres would be closed to public access for the expanded and new fixed EW sites. Development on Navy-administered lands would be consistent with current and planned military use of these lands; development on public lands would not interfere with continued multiple use management in each affected area.

Airspace Use. No significant impacts to airspace or airspace use. EW site development and use would not cause a change in flight patterns or an increase in low-level flight. Establishing and aligning new restricted areas up to 35,000 feet MSL (FL350) would not have a significant impact on commercial aviation, since the Navy would have to request use of these areas from the FAA; use of these areas would not be granted if commercial air traffic is scheduled. Development of additional TIS sites would have beneficial effects by increasing the Navy's ability to track aircraft in areas that currently have poor coverage and by providing better pilot accountability.

Biological Resources. No significant impacts to biological resources. There are no known resident threatened or endangered species within the proposed development areas; therefore, no impacts are expected. None of the proposed activities are expected to affect jurisdictional wetlands; however, the training ranges and the fiber optic route would be surveyed for wetlands prior to any activities taking place, and the Navy would obtain any permits for its activities that are required by the Clean Water Act and the Rivers and Harbor Act. Construction and operation of EW sites would result in adverse but not significant impacts to nonsensitive wildlife and vegetation from site disturbance. Disturbing vegetation may increase the spread of noxious weeds but would be controlled in accordance with the BLM Integrated Weed Management Strategy. There would be no significant impacts to biological resources from training operations.

Geology, Soils, and Mineral Resources. No significant impacts to geology, soils, or mineral resources. The small amount of area proposed for development would not result in high rates of erosion. No mining claims are located in areas of proposed developments.

Water Resources. No significant impacts to water resources. Training activities in the Dixie Valley would avoid streams, ponds, and wetlands. Training at B-19 would not disturb the fenced pond located near its western border. Special use airspace changes would not result in any change in lateral area covered and would not involve ground disturbances; therefore, there would be no impacts to water resources.

Cultural Resources. During the pedestrian survey, cultural resources were identified within the Area of Potential Effect. Cultural resources included three prehistoric archaeological sites, a ranch complex, the Range Control building (Navy's 800 complex), 18 canal features associated with the Newlands Project, and two isolated finds. During the evaluation review process, the archaeological sites and portions of the ranch complex were determined not significant. Other portions of the ranch have been left unevaluated. The Range Control building is significant, and the canal features, though included in the Thematic District Nomination, have not been evaluated for their significance. Isolated finds are not normally significant. Visual effects to historic properties were also assessed, and analysis has determined that there would not be any impacts. Based on the proposed project activities, no impacts would occur to the unevaluated portions of the ranch, the canal features, or to the Range Control building. Management recommendations include temporary fencing at the ranch, monitoring construction activities for the fiber optic cable, and painting all project facilities.

Native American Religious Concerns. Native American consultation was conducted with several tribes involved with the project. Consultation resulted in relocating a single facility; no other concerns were brought forth regarding impacts to traditional cultural properties or other resources.

Visual Resources. No significant impacts to visual resources. Developments are consistent with BLM Visual Resource Management objectives for Class III and Class IV lands. Fixed EW sites provide the greatest

visual contrast, mobile EW sites provide a minor visual contrast when occupied, TIS sites are far removed from key observation points, and fiber optic cable and target developments provide no visual contrast.

Environmental Justice and Socioeconomics. No significant socioeconomic or environmental justice impacts. The proposed action would slightly increase NAS Fallon procurement, thereby introducing more money to the regional economy. Most of the economic benefits would be realized in Churchill County; however, given the dispersed nature of the sites, other affected counties may benefit from secondary spending. The proposed action would not affect commercial airline tax received by counties under airspace used by NAS Fallon. The location of up to 10 personnel and their families to Lander County would increase the circulation of money in the local economy. The proposed action would not disproportionately affect the health or economic opportunities of minority or low-income populations.

Recreation. No significant impacts to recreation, including impacts to Spencer Hot Springs, the Hickison Petroglyphs Recreation Area, or the Pony Express National Historic Trail. For major organized events, Navy use of EW sites nearest the trail may be avoided if coordinated in advance with NAS Fallon and if no conflicts in training would result.

Grazing and Wild Horse and Burro Management. No significant impacts to grazing and wild horse and burro management would occur.

Air Quality. No significant air quality impacts. Minor temporary adverse effects would result during construction of sites; emissions associated with operation of sites would be small. All actions would occur in attainment/unclassified areas with the exception of changes at the Reno MOA, which is in a nonattainment area for ozone and inhalable particulate matter. Because there would be no net increase in air emissions from changing the use times of the Reno MOA, no formal Clean Air Act conformity determination is required.

Noise. No significant noise impacts from construction of EW sites, TIS sites, fiber optic cable routes, and targets. Construction could result in temporary noise levels over 80 dBA in the immediate vicinity of the site, with noise levels decreasing with increased distance from the site. Use of EW sites also would not result in significant noise impacts. Training operations would not change the overall noise environment at the training ranges; therefore, these operations would not affect adjacent land uses. The proposed action would not increase flight operations or change flight patterns and would therefore not introduce noise to new areas. Noise levels may decrease in some areas due to the increased height at which aircraft would fly.

Public Safety and Hazardous Materials. No significant impacts to public safety. Development of TIS sites would have a beneficial impact by enabling NAS Fallon to improve its ability to track aircraft in areas that now have incomplete coverage. Increased coverage would result in better aircraft accountability and increased safety from the ability to identify participating aircraft throughout the FRTC. Hellfire missile training and high altitude weapons delivery training would be contained within the training range impact areas. EW transmitters, while in operation, emit electromagnetic radiation (EMR). None of the sites, including sites along existing roads, would expose Navy personnel or the public to hazardous levels of EMR. The hazard zone for laser spotting would be contained within Navy-administered land in Dixie Valley. Standard operating procedures would be implemented to protect the public from operational hazards related to EW sites and laser spotting and to manage hazardous materials.

Alternatives

The summary below focuses on those specific impacts expected to differ from those projected for the proposed action.

Alternative I. Land-based effects would be slightly less than under the proposed action given that fewer acres would be disturbed. Approximately 68 acres of public land would be disturbed at four fixed EW sites (including roads and powerlines), one expanded EW site, 18 mobile EW sites, and four TIS sites; of the land disturbed, approximately 12 acres would be closed to

public access. Under Alternative I, two additional cultural resource sites being evaluated with the SHPO would be affected. Mitigation would be the same as described for the proposed action. Construction and operation of EW sites would result in slightly greater effects to air quality and noise given the larger number of EW sites that would be developed.

Alternative II. Land-based effects would be less than under the proposed action and Alternative I given that fewer acres would be disturbed. Approximately 34 acres of public land would be affected at two fixed EW sites (including roads and powerlines), one expanded EW site, two fixed communication hubs, 20 mobile EW sites, and four TIS sites; under 12 acres would be closed to public access for the fixed and the expanded EW sites. Under Alternative II, only five of the eight cultural resource sites described for Alternative I would be affected. Mitigation would be the same as described for the proposed action. Because no fixed EW sites would be developed in Big Smoky Valley and Smith Creek Valley, fewer personnel would relocate to Lander County (up to five instead of 10). The social and economic effects of expenditures within the local economy by the additional residents under Alternative II would be less than described under the proposed action and Alternative I.

Alternative III. Land-based effects would be slightly less than under the proposed action and other alternatives given that fewer acres would be disturbed. Approximately 12 acres of public land would be affected at one expanded EW site, one fixed communication hub, three mobile EW sites/fixed communication hubs, 19 mobile EW sites, and four TIS sites; of the land disturbed, approximately four acres would be closed to public access. Socioeconomic effects would be the same as described for Alternative II. Under Alternative III, cultural resources impacts would be the same as described for Alternative II; mitigation would be the same as described for the proposed action.

No Action Alternative. No new impacts would occur under the No Action Alternative. No new EW sites, TIS sites, B-17 and B-19 target improvements, or fiber optic cable routes would be developed. Airspace changes, Hellfire missile training, and high altitude weapons delivery training would not occur. Present training activities would continue under existing conditions. Benefits from increased tracking capabilities would not be realized.

Mitigations Required

As analyzed in Chapter 4 of the EIS and summarized above, the proposed action and alternatives would not result in significant impacts on the human or natural environment. Standard operating procedures would be implemented to minimize minor adverse impacts to some resources.

Potential physical and visual impacts to historic properties could result from the development of the EW sites, the communication hubs, or the fiber optic cable. Through determinations of eligibility and concurrence with the SHPO, and project design, only two archaeological sites would be impacted if the proposed action were selected. These two archaeological must be evaluated for their eligibility to the NRHP. If eligible, adverse impacts could be avoided by project redesign, and if avoidance was not practical, mitigation plans, if required, would be developed in consultation with the SHPO.

Standard operating procedures that would be employed are standard to Navy developments and are required by the BLM for actions taken on public lands. In addition, BLM would issue site-specific terms and conditions for rights-of-way grants. These standard operating procedures, described in detail in Section 2.3, include conducting biological and cultural resource surveys prior to surface disturbance; reducing visual effects by painting, shielding, or netting structures; reducing effects to roads; complying with all federal, state, and local government rules, regulations, and guidelines governing hazardous material use, storage, and transport; conducting laser spotting in a manner to avoid human and environmental hazards; implementing noxious weed control measures and reclamation of abandoned sites; and continuing to coordinate aircraft activities with the FAA.

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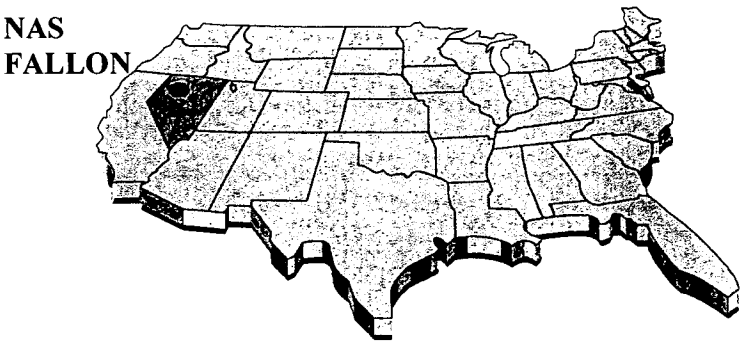


1.0 INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

CHAPTER 1
INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The Naval Strike and Air Warfare Center (NSAWC) at the Naval Air Station (NAS) Fallon, Nevada, has evaluated the existing NAS Fallon training assets and has compared the assets against Navy tactical aviation training objectives to determine changes necessary at the Fallon Range Training Complex (FRTC) to meet Chief of Naval Operations (CNO)-mandated training requirements. This environmental impact statement (EIS), which has been prepared pursuant to and in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations on implementing NEPA (40 CFR 1500-1508), Navy guidelines (OPNAVINST 5090.1B), and Bureau of Land Management (BLM) guidelines (BLM Handbook H-1790-1), evaluates the potential environmental and socioeconomic effects of implementing these changes. None of the actions would increase the current lateral boundaries of airspace, withdraw more public lands, increase the total number of aircraft operations, or increase the size of the impact areas on the training ranges.

Because proposed actions would occur on lands administered by both the Navy and the BLM Carson City and Battle Mountain Field Offices, this EIS has been prepared by the Navy and the BLM as joint lead agencies. Several federal, state, and local agencies with special expertise or administrative responsibilities pertaining to the proposed geographical areas involved have agreed to serve as cooperating agencies, including the US Fish and Wildlife Service (USFWS), the US Forest Service (USFS), the Federal Aviation Administration (FAA), the Bureau of Indian Affairs (BIA), the Yomba Shoshone Tribe, the Fallon Paiute-Shoshone Tribe, the Walker River Paiute Tribe, the Nevada Division of Wildlife (NDOW), Eureka, Lander, and Churchill County Commissions, and Kingston Town Board.

Chapter 1 of this EIS provides a brief overview of the location, history, and mission of NAS Fallon and the FRTC, describes training and training assets, explains the purpose of and need for the proposed action, and describes the public involvement process used during preparation of the EIS. Chapter 2 describes the alternative selection criteria, presents the proposed action, and describes and compares the alternatives to be considered in detail, including a no action alternative, and those eliminated from detailed review. Chapter 3 presents the existing conditions (baseline data) for the areas within the FRTC that would be affected by the proposed action. Chapter 4 analyzes potential environmental impacts of implementing the proposed action and alternatives and where applicable provides mitigations to eliminate or reduce the severity of these impacts.

Chapter 5 evaluates the cumulative effects of this proposal when combined with other proposed and reasonably foreseeable actions. References, a list of preparers, consultation and coordination information, and an acronym list and glossary are included as the remaining chapters of the EIS, followed by responses to comments received on the Draft EIS and technical appendices.

1.2 Purpose of and Need for Action

Background. In June 1996, the BLM Nevada State Director issued the *Central Nevada Communication Sites Final Plan Amendment* that identified preferred locations for future communication sites in central Nevada. The amendment identified areas where sites would and would not be permitted, types of sites appropriate for location on public land, and measures to protect public health and safety as related to their use. A protest was filed by the Navy, and a partial resolution to the protest was reached in July 1997 that upheld all decisions except those restricting threat emitter locations to the Dixie Valley. In June 1998 the decision restricting threat emitter locations was formally withdrawn.

The BLM Nevada State Director issued the *Central Nevada Communication Sites Modified Final Plan Amendment* in August 1998 and requested that the Navy submit an Electronic Warfare Range Plan to the BLM that addresses the comprehensive management of all Navy facilities on public land in central Nevada. The plan was to reflect the Navy's short- and long-term operational needs. The plan would then be reviewed by an independent consultant to verify the training needs and to provide suggestions or alternatives for meeting the Navy's training needs. The BLM State Director specified that the Navy's plan would go through NEPA analysis with a third-party contractor.

As requested, the Navy submitted the *Fallon Range Training Complex Requirements Document* in November 1998. The BLM then contracted with the Institute for Defense Analysis (IDA) to review the Navy's document for verification of the proposed training needs and to provide the BLM suggestions for alternatives. This EIS is the result of the final requirement for a NEPA analysis of the Navy's requirements document.

Purpose. The purpose of the proposed action evaluated in the EIS is to update and consolidate Navy training on public and Navy-administered lands and to update existing airspace overlying these lands.

Need. The need for changes to training requirements results from changes in the real world threat environment. After World War II there were a limited number of superpowers, and military training reflected the threat presented by only these few countries. With the breakup of the Soviet Union and the availability of modern military equipment for purchase by any funded entity, more countries now have sophisticated military capabilities. Current threat scenarios are geared more toward containing short-fused regional conflicts against undefined enemies with unconventional weapons and sophisticated air defense systems than toward large-scale operations. As conflicts become smaller and more compact, the US military must train for such military operations as surgical strikes and no-fly zone enforcement. In addition to training ranges for ordnance training, these operations require small land-based training sites spread out over a larger area to provide flexibility in training for mobile threats. (Ordnance consists of a variety of military weapons, such as bullets, bombs, missiles, or grenades.) These operations also require higher ordnance delivery training altitudes. To meet today's threat environment, NSAWC identified the actions necessary to meet current training requirements and presented these actions in the FRTC Requirements Document (US Navy 1998a) (Table 1-1).

In addition to presenting actions needed to address changes in training requirements, the FRTC Requirements Document was prepared to answer the request of federal, state, and local agencies and the public that NAS Fallon prepare a long-range plan describing foreseeable future actions at NAS Fallon,

including those actions affecting airspace and public lands. The FRTC Requirements Document includes actions that are anticipated to meet training needs over a five-year planning horizon; however, economic viability and changes in the real world threat environment may dictate additional requirements that are unforeseen at this time. NSAWC plans to review the requirements document annually, and any changes resulting from these reviews would undergo additional NEPA analysis, if required.

The changes proposed by the proposed action and alternatives that would occur on BLM-administered lands (i.e., the development of additional EW and TIS sites and the addition of fiber optic connections) are consistent with the Central Nevada Communications Sites Final Modified Plan Amendment (BLM 1998c). The result of this EIS effort would be a Record of Decision (ROD) issued by the Navy and BLM disclosing the effects of the proposed action on Navy- and BLM-administered lands and changes in airspace. The EIS allows the BLM to ensure that Navy actions proposed on public lands meet the BLM mission of managing public lands for multiple uses. This EIS satisfies NEPA requirements for Navy actions on Navy-administered lands and for BLM issuance of rights-of-way for Navy actions on public lands, as described by the proposed action and analyzed in detail in this EIS.

Airspace changes would require rulemaking in accordance with FAA Order 7400.2, Chapter 2, Section 1, "Rulemaking" and Chapter 29, "Restricted Areas." This process would begin after the ROD for the EIS is signed, and the Navy has submitted a request to the FAA for the airspace changes. The FAA would issue a separate ROD after the rulemaking process.

1.3 Location and Mission of NAS Fallon and the FRTC

Location. NAS Fallon is in the Lahontan Valley of Churchill County in west-central Nevada, approximately 70 miles east of Reno and six miles southeast of the city of Fallon (Figure 1-1). NAS Fallon administers approximately 7,872 acres of withdrawn and acquired land associated with the air station and 234,124 acres of land associated with the FRTC (Appendix A). This includes 127,365 acres of public land around the B-16, B-17, and B-19 training ranges, at a Department of Energy (DOE) shoal site west of B-17, and in the Dixie Valley withdrawn under legislation enacted on October 4, 1999 (Figure 1-1) (US Navy 1998c). All proposed changes on Navy-administered lands would occur on lands associated with the FRTC.

The FRTC includes four geographically separate training ranges (B-16, B-17, B-19, B-20), three Range Air Surveillance System (RASS) sites, a tracking system (tactical aircrew combat training system [TACTS]), a threat simulation system (EW area), and special use airspace, including eleven military operations areas (MOAs) and eight restricted areas. A supersonic operations area (SOA) exists as a specially designated area within the existing MOAs to allow for supersonic training (US Navy 1985a). The FRTC airspace overlies parts of Washoe, Lyon, Churchill, Pershing, Mineral, Nye, Lander, and Eureka counties. Most of the lands under the FRTC airspace are public lands administered by the BLM (Figure 1-2).

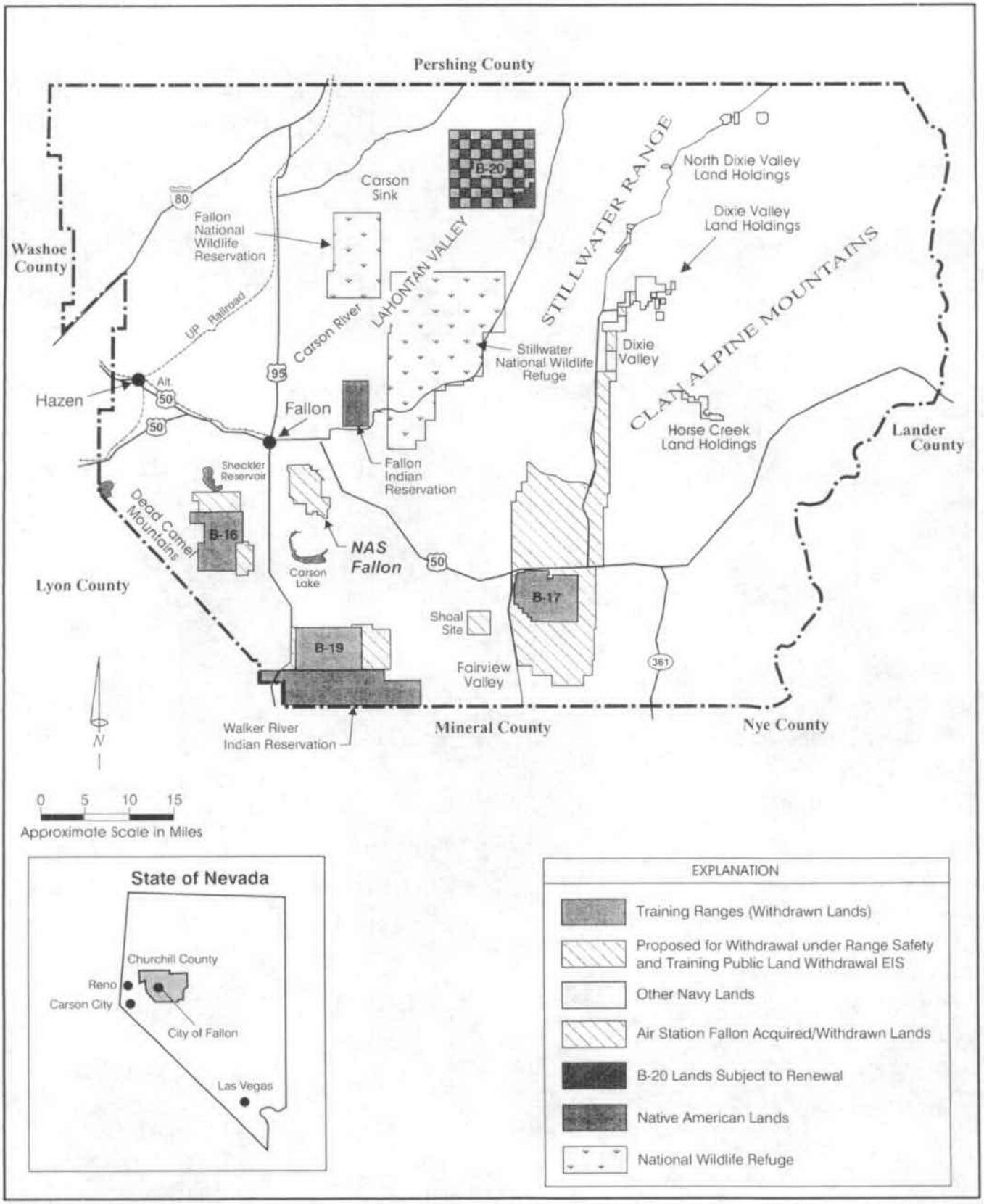
The Navy also maintains BLM rights-of-way for three RASS communication sites, two radio repeater sites (B-19 and New Pass Peak), a bounce board for B-20 (a bounce board resembles a billboard and is used to relay data), one TACTS master site, 27 TIS remote sites, and 33 EW sites; not all of the EW sites contain equipment at this time. The Navy shares a right-of-way with the state of Nevada and a local telecommunications company for a second TACTS master site and shares rights-of-way with the local telecommunications company for a communication relay station, a bounce board for B-19, and electronic surveillance measures equipment; these rights-of-way are also on BLM-administered land. The Navy has USFS special use permits for three TIS sites.

Table 1-1
Summary of NAS Fallon Training Requirements

Action	NEPA Status
Electronic Warfare (EW) Sites	Evaluated in detail in this EIS
Airspace Requirements	
High altitude weapons delivery and Hellfire missile training at B-17 and B-20	Evaluated in detail in this EIS
B-16 airspace realignment	Categorically excluded; included in Chapter 5, Cumulative Impacts
Special use airspace configuration	Evaluated in detail in this EIS
Target Complex Requirements	
B-17 improvements (helicopter ordnance/gunnery target, live mortar range)	Evaluated in detail in this EIS
B-17 improvements (close air support)	Categorically excluded; included in Chapter 5, Cumulative Impacts
B-19 improvements (helicopter ordnance/gunnery target)	Evaluated in detail in this EIS
B-19 improvements (small arms range, close air support)	Categorically excluded; included in Chapter 5, Cumulative Impacts
B-20 tactical target development	Will require additional NEPA analysis after proposed action is defined; included in Chapter 5, Cumulative Impacts
Tracking and Communication Requirements	
Tracking Instrumentation Subsystem (TIS) sites	Evaluated in detail in this EIS
Joint Tactical Combat Training System (JTCTS) implementation	Will require additional NEPA analysis after proposed action is defined; included in Chapter 5, Cumulative Impacts
Fiber optic cable routes	Evaluated in detail in this EIS for B-16 and B-19 cable routes. B-20 cable route will require additional NEPA analysis after proposed action is defined; included in Chapter 5, Cumulative Impacts
Training Land Requirements	
Utilization of Navy-administered land	Evaluated in detail in this EIS
Range Safety and Training Land Withdrawal	EIS finalized November 1998; legislation enacted October 4, 1999; incorporated by reference in Chapter 5, Cumulative Impacts
B-20 Land Withdrawal Renewal	EIS finalized January 1999; legislation enacted October 4, 1999; incorporated by reference in Chapter 5, Cumulative Impacts

These training requirements have independent utility; each action could be implemented separate from the others.

Categorically excluded actions have already undergone NEPA analysis and are evaluated in cumulative analysis.



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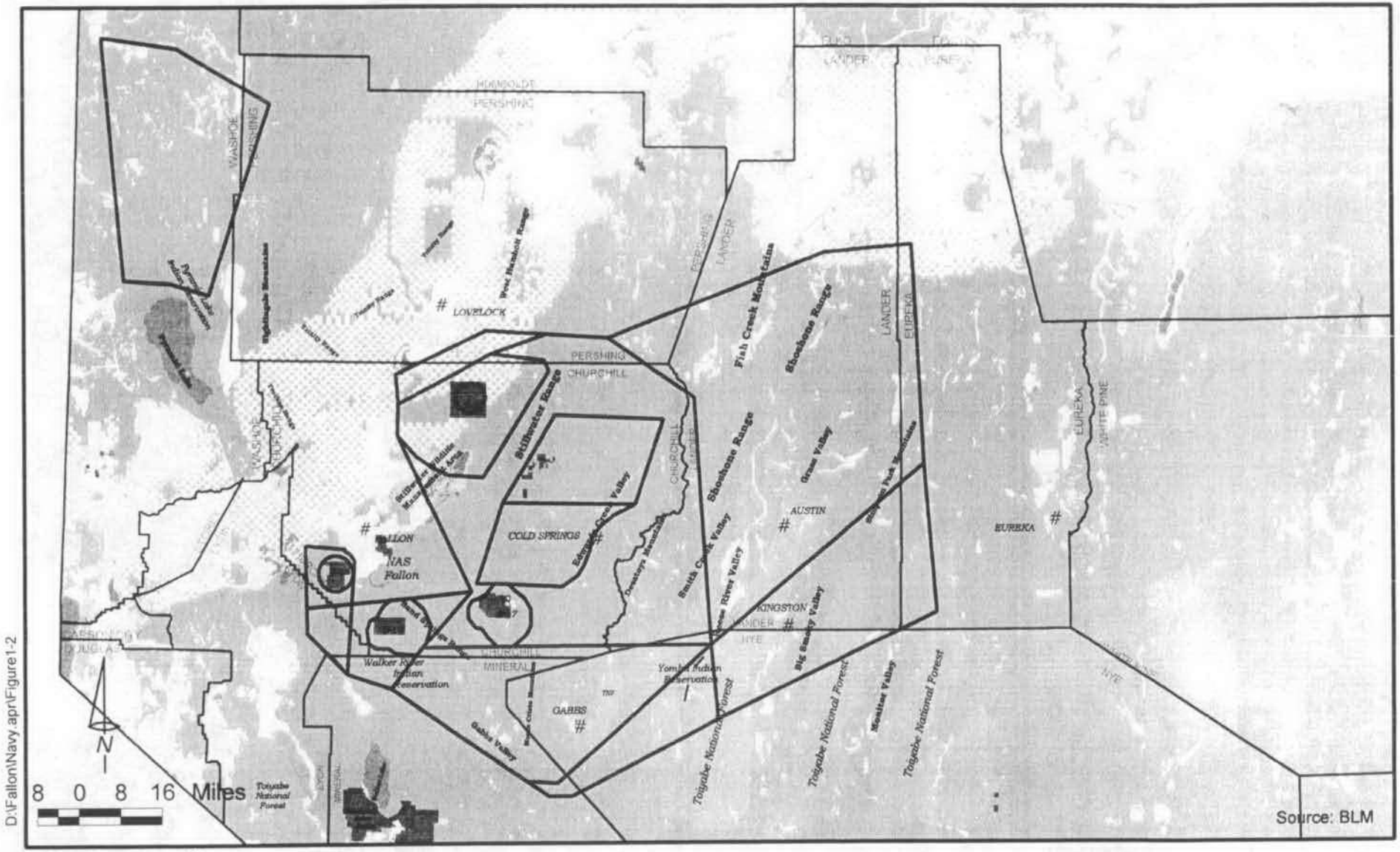
NAS Fallon is located in Churchill County, Nevada. In addition to the air station, the Navy administers four training ranges and owns land in the Dixie Valley. The Walker River Indian Reservation extends into Mineral and Lyon Counties.

Location of US Navy-administered Lands

NAS Fallon, Nevada

Source: Tetra Tech

Figure 1-1



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The FRTC overlies public, military, and private lands in several counties.

Legend

- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge
- Special Use Airspace

Land Ownership under the FRTC

NAS Fallon, Nevada

Tetra Tech, Inc

Figure 1-2

Mission. The mission of NAS Fallon is to provide facilities (including training ranges), services, and materials to tenants and transient units stationed at or being deployed to NAS Fallon for CNO-approved aviation training. NSAWC is the major tenant command at NAS Fallon; it was formed in July 1996 and assumed the missions of several other tenants and functions at NAS Fallon, including the Naval Strike Warfare Center, Naval Fighter Weapons School (TOPGUN), Carrier Airborne Early Warning Weapons School (Top Dome), and the NAS Fallon Range Department. NSAWC provides advanced training for naval aviators whose missions are to attack enemy targets ashore or to engage enemy aircraft in air-to-air warfare. In addition to conducting training, NSAWC develops the tactics and procedures that are used to employ new weapons or other aircraft systems and to counter new threats. NSAWC also prepares the training and tactics publications that are distributed to all naval aviation units, provides oversight for all the Navy's aviation weapon schools, conducts assessments to help set Navy priorities regarding many aspects of naval air training, and supports real world operations. NSAWC operates, maintains, schedules, develops, and configures the FRTC. NAS Fallon and tenants other than NSAWC include approximately 1,825 personnel and 30 aircraft; NSAWC has 1,000 personnel and 40 aircraft.

1.4 NAVAL AIR TRAINING

To understand training needs at NAS Fallon, it is important to understand the types of training activities that occur there. This section describes the training continuum and training regimens for Navy pilots and training assets and capabilities at NAS Fallon.

1.4.1 Naval Air Training Continuum and Regimens

Naval air training at NAS Fallon follows a progression from basic training to increasing levels of training complexity and intensity. The training continuum starts with basic flight training, continues with Fleet Replacement Squadron (FRS) training, unit level training, typewing weapon school training, integrated air wing training, and ship and battlegroup workups, and ends with deployment when aircraft carriers go out to sea. NAS Fallon follows the axiom, "Train like you fight." The components of training are described below.

Basic Flight Training. This is the initial training administered to all naval aviators from the first day of flight training to the day they earn their wings. This basic flight training is conducted in training aircraft and occurs over one to two years. Basic flight training occurs primarily at B-16.

Fleet Replacement Squadron (FRS) Training. FRS training is the initial training in fleet aircraft (F/A-18) and takes five to eight months. A typical FRS detachment consists of 12 aircraft. NAS Fallon hosts an FRS detachment that is based permanently at NAS Fallon and that operates a maintenance facility for F/A-18s from NAS Lemoore, California, and NAS Oceana, Virginia, the respective West Coast and East Coast Hornet FRSs. FRS training occurs at all of the training ranges except when an air wing is training; during these times FRS training takes place at B-16 and B-20.

Unit Level Training. This is the day-to-day training performed in a deployed squadron. It emphasizes single aircraft, section (two aircraft), and division (four aircraft) events. Unit level training achieves initial basic qualifications for new aircrew and maintains proficiency for aircrews that are already qualified. Most West Coast units use NAS Fallon and the FRTC for their unit level training. Unit level training occurs at B-16.

Typewing Weapon School. The typewing weapon school offers a structured syllabus administered by each typewing to standardize squadron unit level training. At the completion of unit level and typewing training, aircrews are familiar with their aircraft, aircraft weapons and weapon systems, and single aircraft, section, and division tactics. Navy

F/A-18, F-14, E-2, and EA-6B weapon schools train at NAS Fallon training ranges.

Integrated Air Wing Training. Integrated air wing training brings squadrons together to train as a team. Teams perform integrated air wing strikes. All air wing aircraft types meld their capabilities together to form a coherent fighting force.

NAS Fallon supports, trains, and houses carrier air wings for initial and refresher integrated air wing training. A carrier air wing consists of all aircraft, pilots, crew, and aircraft maintenance personnel assigned to an aircraft carrier. A typical carrier air wing consists of 75 to 90 aircraft and an aircrew of between 1,500 and 2,000 personnel. NAS Fallon hosts four to six carrier air wings and up to two Marine air groups per year for an intensive four-week training program prior to their scheduled deployment aboard aircraft carriers or to air stations overseas. This integrated training focuses on combat tactics and team building by allowing aircrews to perform realistic combat warfare techniques, including air-to-air and air-to-ground combat scenarios. In addition, NAS Fallon provides integrated ground training and air support scenarios. All Navy air wings train at NAS Fallon and the FRTC.

Battlegroup Workups. During battlegroup workups an air wing deploys aboard an aircraft carrier to operate and train with an entire battlegroup (aircraft carrier, cruisers, destroyers, frigates, and submarines). The unit level training of the battlegroup training usually takes six to 18 months, depending on the battlegroup deployment schedule. Navy air wings conduct long-range strikes from the carrier to the NAS Fallon training ranges.

Other Training. In addition to the training described above, other training performed at NAS Fallon includes carrier airborne early warning weapons school training, strike fighters tactics instructor school training, combat search and rescue training, close air support training, very limited Tomahawk cruise missile testing, and adversary squadron training.

Carrier Airborne Early Warning Weapons School Training (Top Dome). This school trains the aircrews that fly E-2C airborne early warning aircraft. The E-2C provides early warning of hostile aircraft and serves as a command and control platform for the aircraft control and battle management activities that are required for large-scale integrated air operations. E-2C crews training at NAS Fallon are taught to identify friendly and enemy aircraft operating over land.

Strike Fighter Tactics Instructor School (Top Gun). Top Gun trains naval aviators to become instructors in strike fighter tactics; instructors then train the aviators in the units to which they are assigned. Trainees learn advanced tactics to help them find and destroy enemy aircraft while defending themselves and other friendly aircraft from attack by hostile aircraft.

Combat Search and Rescue Training (CSAR). The NSAWC mission supports integrated air and ground training, including combat search and rescue training. Combat search and rescue training consists of integrated training with ground personnel and helicopter and fixed wing air support. The objective of the training is rescuing and transporting ground personnel, such as downed pilots, within enemy territory. NAS Fallon is the only facility where Navy combat search and rescue training is conducted; training also occurs on public lands. Combat search and rescue generally consists of three to six personnel training with an additional three to six person "opposition" team. Most ground training is associated with the four to six air wing events that occur each year at NAS Fallon. Realistic integrated air and ground training is critical to the successful performance of fleet replacement squadrons and the deployment of carrier air wings.

Close Air Support Training. Close air support trains tactical aircrews in ground operations and naval

special warfare operations in a realistic combat environment. Ground operations include simulating, identifying, or marking targets for planes to attack. Ground training uses a howitzer, machine guns, and laser aiming markers; the howitzer fires white phosphorous illumination rounds to mark tactical targets, the machine guns fire tracer rounds to simulate enemy fire, and the laser aiming markers designate targets with lasers. Naval special warfare operations include small arms fire and maneuver, demolition, and rescue training for Navy Sea Air Land (SEAL) Team personnel. Ground units learn how to mark targets for aircraft and how to neutralize enemy positions, including radar sites, surface-to-air missile sites, and early warning devices. Close air support training takes place on the B-17 and B-19 training ranges in one-day to three-day evolutions eight to sixteen times per year (US Navy 1998d).

Tomahawk Cruise Missile Testing. The Tomahawk cruise missile is a self-guided, terrain-following, subsonic cruise missile designed to be fired from Navy ships or submarines against land targets. The missile has been tested since 1976 at military testing facilities in California, Utah, and Nevada. The B-17 training range at NAS Fallon is one component of the West Coast testing venue. Tomahawk cruise missiles traveling to B-17 are launched from the Naval Air Warfare Center Weapons (NAWCWPNS) Sea Range in Southern California and travel a preplanned route to B-17 using the IR-200 and IR-206 military training routes. Between six and twelve Tomahawk tests are anticipated to be conducted each year, most of which terminate at other West Coast test facilities. All missiles tested at NAS Fallon are inert and would be accompanied by two chase aircraft and five other support aircraft. The chase aircraft monitor missile flight and, if necessary, assume manual control of the missile (US Navy 1998e). Only two missile launches have ever terminated at B-17—the last one was in 1995—and no specific future launches have been scheduled.

Adversary Squadron Training. A naval reserve squadron (VFC-13) is based at NAS Fallon to provide simulated threat aircraft for air warfare training; this unit flies F-5 aircraft.

1.4.2 Training Assets and Capabilities

Training Ranges and Air Station. The most important component of the NAS Fallon operational training capabilities are the training ranges and the air station (see Figure 1-1). The training ranges provide target areas for air-to-ground ordnance delivery training and live weapons firing and provide limited area in support of integrated air and ground training. The air station provides facilities in support of naval training at NAS Fallon.

Air Station. NAS Fallon is six miles southeast of the city of Fallon and 70 miles east of Reno. The station lies within the central portion of the Carson Desert in an area commonly referred to as the Lahontan Valley and is surrounded by federal (BLM and Bureau of Reclamation [BOR]) and private lands. The air station includes an aircraft runway system, aircraft maintenance and support facilities, personnel housing and support facilities, and administration facilities.

B-16 Training Range. B-16 is approximately nine miles southwest of NAS Fallon. The BLM and BOR administer the lands around B-16, and the Pony Express National Historic Trail runs parallel to and approximately one mile south of the southern border. The training range is used for air-to-ground conventional bombing, using only practice/inert ordnance, and contains two bull's-eyes and three spotting towers. The closest of the four training ranges to NAS Fallon, B-16 allows for minimal travel time, thereby maximizing training time. The training range is also the only training area in the FRTC that is independent of the restricted and military operations area airspace over B-17, B-19, and B-20 used during air wing training. The airspace over B-16 can be scheduled separately from other airspace to accommodate other military training during air wing

training. B-16 is used primarily for basic and intermediate training.

B-17 Training Range. B-17 is approximately 35 miles southeast of NAS Fallon and is the most heavily used training range within the FRTC. It is bordered on the north by Highway 50 and the Pony Express National Historic Trail, and to the west by Scheelite Mine Road. Public lands primarily surround the range. B-17 is equipped with numerous scored, realistic looking tactical targets, a standard bull's-eye, and a strafing target for live ordnance training. The B-17 tactical target complex includes simulated aircraft shelters, petroleum oil lubricant site and tank farm, power plant area, missile assembly area, industrial park targets, runways, airfield control tower, and obsolete helicopter and aircraft. Modern military aircraft systems are able to hit targets once the targets are identified; finding the targets is a key element of modern military aircraft training. The numerous targets at B-17 provide multiple aim points for target acquisition training, which increases the realism of training. B-17 also is used for close air support training.

B-19 Training Range. B-19 lies approximately 16 miles south of NAS Fallon. Highway 95 parallels the western boundary, and the Walker River Indian Reservation borders the southern boundary. B-19 has remote tower scoring capabilities, a conventional bull's-eye, strafing target, close air support and laser designating areas, and tank targets in the high impact area. In addition to live ordnance bombing, B-19 is used for close air support and SEAL training.

B-20 Training Range. B-20 is the largest, most remote, and least developed of all the FRTC tactical target training ranges. It is in the Carson Sink, approximately 17 miles east of Highway 95 and seven miles north of the Stillwater Wildlife Management Area. B-20 is used for air-to-ground training, strafing, and laser targeting and contains one mock submarine, two strafing banners, two bull's-eyes, one lighted helicopter pad, run-in lighting, two spotting towers, and electronic scoring. The training range provides a high explosive impact target for live ordnance up to 2,000 pounds. Because of the shallow water table beneath B-20, an elevated ground base surface is required for roads, buildings, and most permanent target features. Off-road area access is provided by all-terrain vehicles and helicopters.

Dixie Valley Area. Dixie Valley lands are approximately 35 miles east of NAS Fallon, north of Highway 50, and east of Highway 121. These land holdings cover approximately 9,741 acres and primarily are used for integrated air and ground training, visual cueing, and combat search and rescue training. A few scattered military support structures are on these lands, including a laser tower and EW radar systems.

FRTC Airspace. NAS Fallon has established and uses over 13,000 square miles of airspace, including eight restricted areas, eleven MOAs, an aerial refueling route (AR), military training routes (MTRs), altitude reservations (ALTRVs), and air traffic control assigned airspace (ATCAA) areas (Figure 1-3). In 1998, 38,000 sorties were flown. A sortie is a take-off and landing and can include up to 12 ordnance deliveries. In 1998, 133,600 aircraft operations were flown. An operation is an aircraft operating in special use airspace. Air wing training and unit level training accounted for the largest percentage of 1998 flight operations, approximately 30 percent and 23 percent, respectively. About 75 percent of the flight operations were flown during daylight hours and at elevations over 10,000 feet above ground level (agl). Per a memorandum of understanding signed in 1987 by the Navy, Department of Interior (BLM and USFWS), and State of Nevada, flights over the Stillwater WMA, Stillwater NWR, Fallon NWR, and some other wetland habitats in the Lahontan Valley will not be conducted below 3,000 feet agl.

Restricted Airspace. Restricted airspace is above and around the boundaries of the training ranges. It generally starts at from 0 to 1,500 feet above ground level and extends up to no more than 18,000 feet

above mean sea level (MSL) (flight level [FL] 180). Restricted airspace is used for hazardous military activities, such as artillery and missile firing and air-to-ground gunnery and bombing, that are conducted on the training ranges. Civil aircraft can fly in restricted areas when these areas are not being used for military training activities. Typically, military aircraft use restricted areas from 7:15 AM to 11:30 PM (local time), Monday through Friday, and for shorter periods on Saturdays and Sundays, if required.

Military Operations Areas (MOAs). MOAs are used for military training activities that do not involve the release of ordnance, such as in-flight rendezvous during training missions, air combat maneuvers, air intercepts, aerobatics, and transits to training ranges. MOAs start at from 100 to 500 feet above ground level and extend up to but not including 18,000 feet MSL (FL180). Civil aircraft may transit MOA airspace anytime, including times when MOA airspace is activated for military use. In 1958, to enhance flight safety, a visual flight rules (VFR) corridor was created specifically for general aviation to transit FRTC special use airspace. General aviation aircraft flying by instrument flight rules (IFR) also can use the airspace but in practice are routed around MOAs or can be separated from military activities occurring in the MOAs by air traffic controllers.

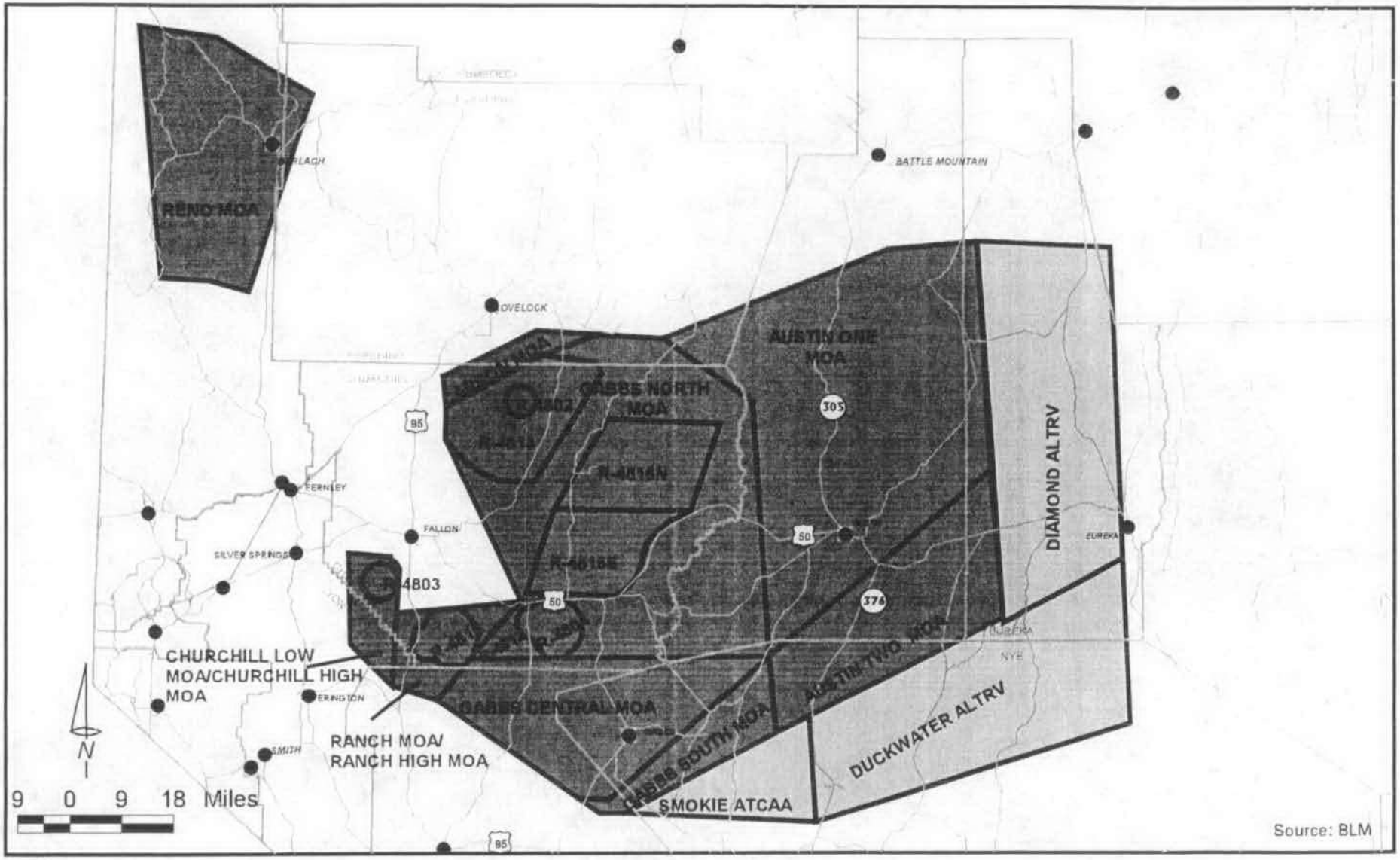
Aerial Refueling Route (AR) An AR is a route designated for aerial refueling operations. Civil aircraft can use the airspace within the AR while refueling operations are underway. Air traffic control provides separation for IFR aircraft from military aircraft.

Military Training Routes (MTRs). MTRs are corridors of airspace that lead to and from and pass through the FRTC airspace. MTRs usually are established below 10,000 feet MSL for low altitude navigation and terrain-following training at speeds in excess of 250 knots. MTRs may be designated instrument routes (IR), operated in accordance with instrument flight rules, or visual routes (VR), operated in accordance with visual flight rules.

Air Traffic Control Assigned Airspace (ATCAA). ATCAAs are FAA-authorized airspace of defined vertical and lateral limits reserved for a block of time. The FRTC ATCAAs are located above most existing MOAs and accommodate aircraft maneuvering at or above 18,000 feet MSL (FL180). All nonparticipating aircraft at or above this altitude are required to fly under instrument flight rules (IFR), which have minimum separation criteria; ATCAAs allow military aircraft to conduct training at or above FL180 and are exempt from IFR separation criteria while operating in the airspace.

NAS Fallon has several ATCAAs associated with FRTC airspace, including the Smokie ATCAA (Figure 1-3). The Smokie ATCAA was established in August 1996 and is used once or twice per year. The Navy has to request use of the Smokie ATCAA at least 24 hours in advance and may not request use of the airspace for more than two 45-minute periods per day. In addition, the Smokie ATCAA cannot be requested between 1000 and 1200, Mountain Time Zone. The FAA makes the Smokie ATCAA available to the Navy only when the ATCAA is scheduled and only if use of the ATCAA would not adversely affect other traffic, typically commercial airliner traffic transiting the airspace.

Altitude Reservations (ALTRVs). ALTRVs are short-term, time-limited airspace reservations used to allow multiple aircraft (air wings) to set up and organize outside the MOAs prior to entering a simulated combat environment. ALTRVs extend from 18,000 (FL180) to 25,000 (FL250) or 28,000 (FL280) feet MSL and are reserved only for the time the aircraft are within the ALTRV. Once the aircraft leave the ALTRVs, they cannot use the airspace again without rescheduling with the FAA.



D:\Fallon\Figures.apr\Figure1-3

The FRTC overlies public, military, and private lands in several counties.

Legend

- Roads
- Special Use Airspace
- ALTRV/ATCAA Airspace

Location of the FRTC

NAS Fallon, Nevada

NAS Fallon has two ALTRVs associated with FRTC airspace, the Diamond and Duckwater ALTRVs (Figure 1-3). These airspace areas were established in August 1996. The Diamond ALTRV is used once or twice per year, and the Duckwater ALTRV is used several times during each of the air wing training events that occur four to six times per year. The Navy has to request use of these ALTRVs at least 24 hours in advance. The Navy may not request use of the Diamond ALTRV for more than four one-hour periods per day or use the Duckwater ALTRV for more than two 45-minute periods per day. In addition, the Duckwater ALTRV cannot be requested between 1000 and 1200, Mountain Time Zone. The FAA makes the ALTRVs available to the Navy only when the ALTRVs are scheduled and only if use of the ALTRVs will not adversely affect other traffic, typically commercial airliner traffic transiting the airspace.

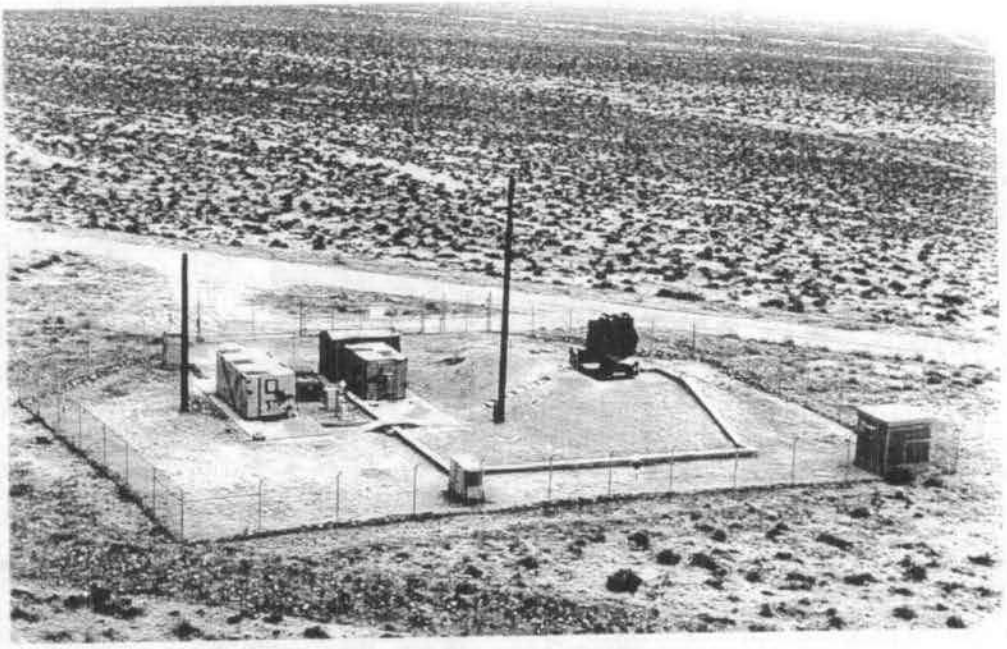
ATCAAs and ALTRVs are established and used the same way, and there is little difference between them. The use of existing ALTRVs and ATCAAs has eliminated any foreseeable need for establishing the Diamond, Duckwater, and Smokey MOAs envisioned in the Special Nevada Report (SAIC 1991).

EW, RASS, and TACTS Sites and Visual Cueing Devices. Realistic and strategic combat training representative of combat situations Navy personnel may face around the world requires the use of EW, RASS, and TACTS sites and visual cueing devices. The existing NAS Fallon-administered lands and rights-of-way provide the area for these activities to a limited degree; the lands recently withdrawn under the Range Safety and Training Public Land Withdrawal EIS would further fulfill the Navy's requirement for these assets. These capabilities are described below.

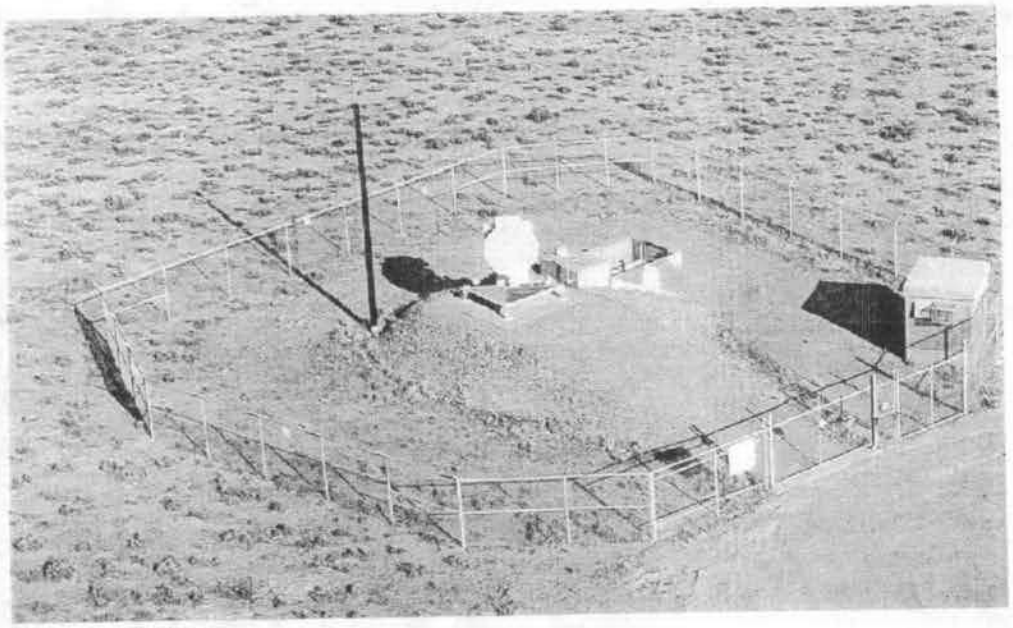
Electronic Warfare (EW) Sites. The EW sites within the FRTC represent a diversified complex of staffed and unstaffed multiple range radar systems that transmit search and tracking signals to simulate integrated air defense systems typical of many of those found around the world today. Each EW site consists of one or more emitter units with support equipment that can be employed to provide different presentations for different training scenarios. Equipment at each site may include height finder radars, search radars, shooter systems (surface-to-air missile and anti-aircraft artillery), a communications shelter, a microwave voice transmitter and data communications link, a maintenance van, a diesel aboveground storage tank, and a 200-kW or smaller generator (Figure 1-4). Equipment generally is powered by electric lines, with an emergency diesel generator as backup; some sites use generators as the primary source of power. EW sites are generally located on valley floors, and road access to the sites is provided. Two to three personnel are stationed at most staffed sites for five-day periods; one site (EW-70) is staffed with five to six personnel. There are now 46 EW systems on 29 EW sites within 25 miles of B-17; another seven EW sites have been developed but do not contain equipment at this time (Figure 1-5).

Range Air Surveillance System (RASS) Sites. There are three RASS sites within the FRTC—one in Dixie Valley at Eleven Mile Canyon, one on Vigus Butte in the Reese River Valley near Austin, and one on a hill south of Gabbs (Figure 1-5). A RASS site consists of a rotating antenna on a tower, an equipment shelter, a generator and fuel tank, a power transfer switch and associated shelter, and an intrusion detection system. Some sites also include a microwave data link, and all sites are fenced.

RASS sites provide radar tracking of aircraft within a 60-mile radius of the site. In addition, each site is equipped with an interrogator that collects location and altitude data from aircraft equipped with transponders. The tracking data are used to monitor civilian and military air traffic within the MOAs and to provide low-activity military aircraft tracking during air wing and TOPGUN training exercises (US Navy 1991b). RASS sites also can be used to



Manned EW site.



Unmanned EW site.

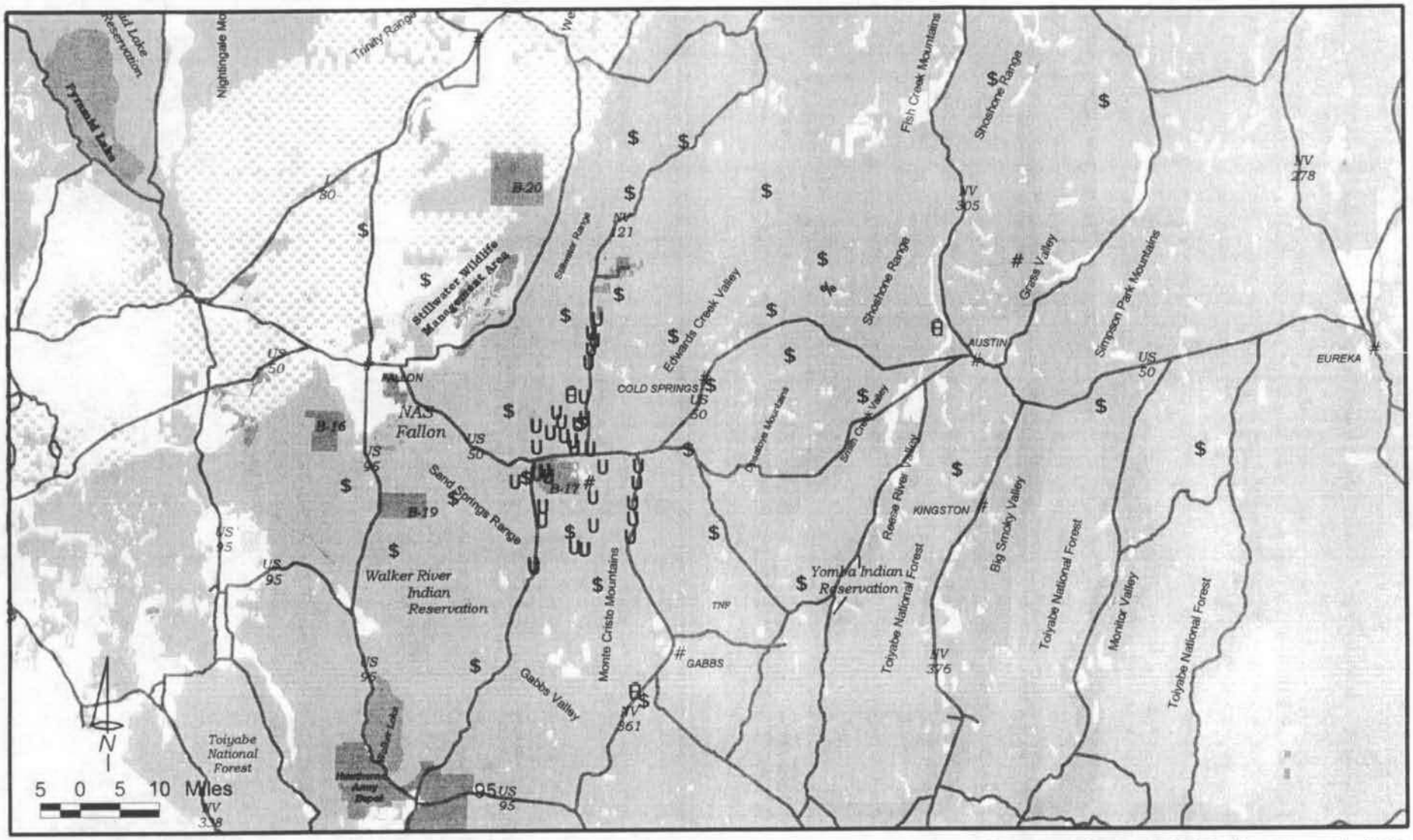
There are 36 EW sites, of which 12 are manned, one contains manned equipment in a non-operational status, 16 are unmanned, and 7 do not contain equipment.

Typical EW Sites

NAS Fallon, Nevada

Figure 1-4

Source: NAS Fallon



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Realisitic combat training representative of real world conditions requires the use of EW, RASS, and TACTS/TIS sites.

Legend

- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge
- Roads
- U Fixed EW Site
- # TACTS/TIS Site
- $ TIS Site
- RASS Site
- Communications Relay Site

Location of Existing EW, RASS, and TACTS/TIS Sites

NAS Fallon, Nevada

Tetra Tech, Inc

Figure 1-5

supplement TACTS by providing positional data on aircraft that are not instrumented for tracking.

Tactical Air Combat Training System (TACTS) Sites. TACTS is a computer system that allows pilots to train in realistic air-to-air and air-to-ground situations while being tracked and recorded for debrief. TACTS is made up of a network of two master sites, 30 TIS remote sites, and podded aircraft (aircraft outfitted with tracking instrumentation). Existing TACTS and TIS sites are shown on Figure 1-5. The master sites consist of a solar panel or commercial power, a backup generator, a small building to shelter electronics, and an antenna tower (Figure 1-6). A TIS remote site generally consists of a solar panel and a relay station on a 16-foot by 16-foot site (Figure 1-6). Master sites and TIS remote sites generally are constructed on mountaintops and hilltops with no commercial power or road access; however, one master site has commercial power and road access, and three TIS remote sites are on valley floors. The TIS sites receive and retransmit telemetry data about the aircrafts' geographic and vertical positions, plus dynamic flight parameters to and from the TACTS master site. From this point, the data are transmitted to a central computer for processing, display, and evaluation. TACTS provides real-time aircraft tracking for up to 36 aircraft; air-to-air, air-to-ground, and ground-to-air (integrating EW systems) weapons simulation; and real-time and post-event electronic replay of the movements and performance of aircraft within the FRTC. This tracking evaluates combat effectiveness of the training events and provides aircraft accountability and safety by increasing the ability to identify participating aircraft locations in most of the FRTC. TACTS has been operational since 1985, with the initial coverage being in the B-17 area. The tracking area has expanded in recent years to cover increased areas and levels of coverage.

Visual Cueing Devices. Visual cueing devices provide combat strike pilots with a variety of necessary visual scenario challenges to enhance aircrew situational awareness. The aircrew's ability to sight and recognize ground threats is an essential element of overland air combat strike training. Visual cueing includes active and passive cueing. Active visual cueing devices include "Smoky SAMs," which are 6-inch by 15-inch pyrotechnic-powered projectiles constructed of formed paper with styrofoam fins. Smoky SAMs are launched from Navy-controlled lands during carrier air wing training to simulate the initial boost phase of a surface-to-air missile (SAM). Passive visual cueing devices include mock mobile launch vehicles, replicated or actual foreign mobile (vehicular) weapon systems, tanks, and personnel carriers.

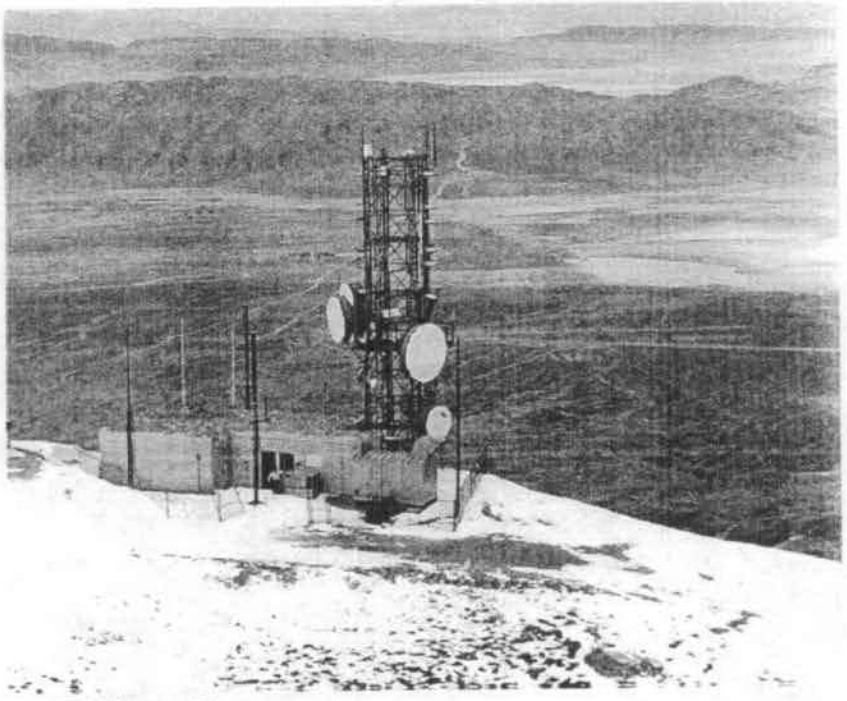
1.5 Relationship to Navy, BLM, and Non-BLM Policies, Plans, and Programs

The proposed action has been reviewed for compliance with BLM policies, plans, and programs. The changes proposed by the proposed action and alternatives that would occur on BLM-administered lands, i.e., the development of additional EW and TIS sites and the addition of fiber optic connections, are consistent with the Central Nevada Communications Sites Final Modified Plan Amendment (BLM 1998c). Through the EIS process, the proposed project is evaluated for conformance with existing land use plans and restrictions by the state of Nevada and requirements for permitting by affected counties.

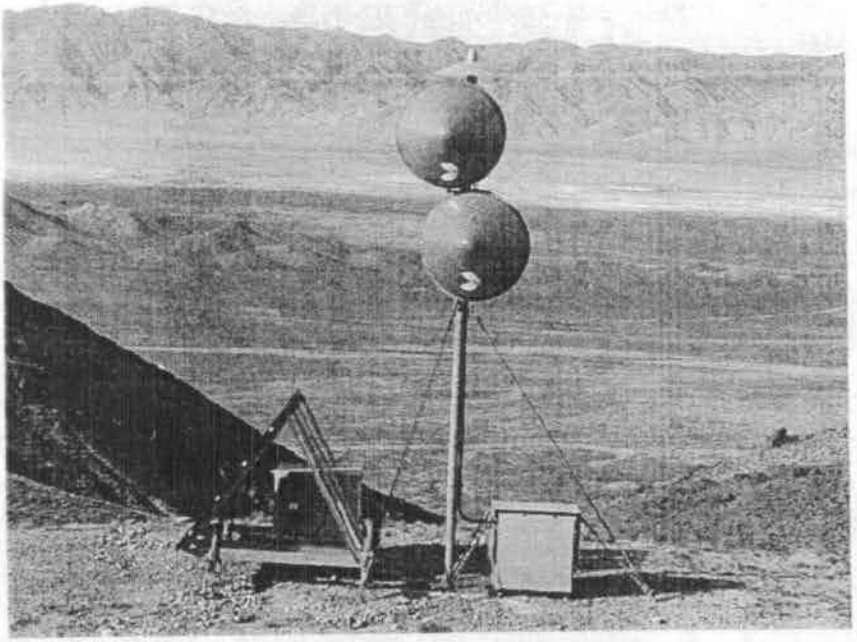
1.6 Authorizing Actions

Actions proposed on BLM-administered lands must comply with the Federal Land Policy Management Act (FLPMA) of 1976. These statutes require the BLM to analyze the proposed action on federal lands to ensure that: 1) adequate provisions are included to prevent undue or unnecessary degradation of public lands; 2) measures are included to provide for reasonable reclamation of disturbed areas; and 3) proposed actions would comply with other applicable federal, state, and local laws and regulations.

Although NEPA provides the regulatory framework to evaluate the proposed action and alternatives, a number of other regulatory requirements may be



TACTS Master Site.



TIS site.

NAS Fallon operates two TACTS master sites-one on Fairview Peak and one on Mt. Callaghan-and 30 TIS sites.

TACTS Master Site and Typical TIS Site

NAS Fallon, Nevada

Figure 1-6

Source: NAS Fallon

applicable. These are discussed under the appropriate resource sections in Chapters 3 and 4.

1.7 PUBLIC INVOLVEMENT

NEPA requires an early and open process for determining issues that should be addressed and analyzed in the EIS to assist the decision-maker in making a determination to implement the proposed action or an alternative. This EIS process, as mandated by NEPA, is designed to involve and inform the public and federal, state, and local agencies as to the environmental consequences of a federal agency's actions. This is to provide the agency with important information and analyses to promote better decision-making by the federal agency.

Before initiating the formal EIS scoping process, the Navy and BLM hosted a prescoping meeting to introduce the FRTC Requirements Document. In the spirit of consensus-building and to solicit information on potential areas of concern, representatives of agencies and organizations known to have an interest or thought to have an interest in the proposed action were invited to attend. The meeting was attended by representatives of NAS Fallon; the Navy's Engineering Field Activity West and Chief of Naval Operations; BLM Carson City and Battle Mountain Field Offices; Fallon Paiute-Shoshone Tribe, Yomba Shoshone Tribe, and Walker River Paiute Tribe; state of Nevada Department of Environmental Protection, Division of State Lands, Department of Transportation, and Division of Wildlife; Eureka, Lander, and Churchill Counties; city of Fallon; and Rural Alliance for Military Accountability.

Public Scoping

Pursuant to NEPA, the public scoping process for the EIS began on December 21, 1998, with the publication of a Notice of Intent (NOI) in the Federal Register, and continued through February 5, 1999. Comments were received until February 22, 1999. The purpose of scoping is to identify potential environmental issues related to the proposed action. The scoping process for the EIS included placing a notice in the Federal Register and newspapers, conducting public meetings, and using direct mail. Comments received during the scoping period were considered in determining the issues to be evaluated in the EIS.

The public was notified of the Navy's and the BLM's intent to prepare the EIS by an NOI published in Federal Register Volume 63, page 70416, on December 21, 1998. The NOI also was published in the Reno Gazette Journal on December 28 and 29, 1998, in the Carson Appeal on December 27 and 28, 1998, in the Battle Mountain Bugle on December 29 and 31, 1998, in the Lahontan Valley News on December 26 and 28, 1998, and in the Mineral County Independent on December 30, 1998, and January 6, 1999.

Over 300 letters announcing public scoping meetings and describing the proposed action were mailed on January 11 and 12, 1999, to all public agencies, Native American tribes, public interest groups, and individuals known to have an interest or thought to have an interest in the proposed action. The scoping letter invited written comments and announced public scoping meetings on January 20, 1999, in Eureka, Nevada, on January 21, 1999, in Austin, Nevada, on January 27, 1999, in Fallon, Nevada, and on January 28, 1999, in Reno, Nevada. Eleven individuals attended the public scoping meeting in Eureka, 15 individuals attended the public scoping meeting in Austin, 20 individuals attended the public scoping meeting in Fallon, and 38 individuals attended the public scoping meeting in Reno. During the scoping process, letters were received from 25 agencies, organizations, and individuals.

A scoping report is available for review in the BLM Carson City and Battle Mountain Field Offices (US Navy 1999f). Overarching issues presented during scoping are as follows:

- *Biological Resources.* Several agencies and organizations requested a detailed analysis of the

effects of the proposed action on sensitive species, sensitive habitats, and big game species. Existing biological resources are described in section 3.3, and the effects of the proposed action on these resources are analyzed in section 4.3, Biological Resources.

- *Noise.* A number of individuals voiced concerns over the effect the proposed action would have on noise levels over central Nevada. Flight patterns are discussed in section 4.2, Airspace Use, and noise effects are evaluated in section 4.13, Noise.

- *Socioeconomics and Environmental Justice.* Agencies and individuals requested a socioeconomic analysis of the effect on commercial aviation from raising restricted airspace and an environmental justice analysis of the effect of the proposed action on residents of Eureka and Lander Counties. These analyses are presented in section 4.9, Environmental Justice and Socioeconomics.

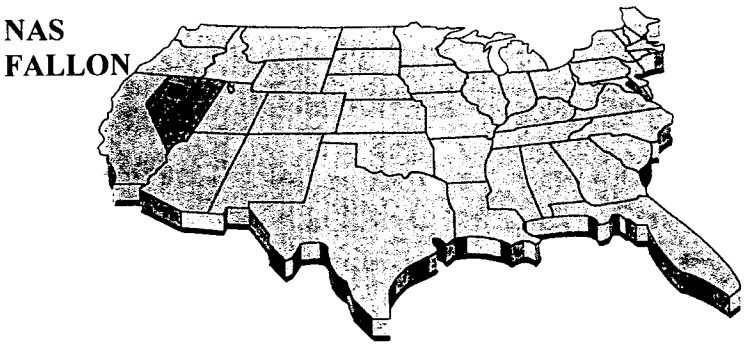
- *Public Health and Safety.* Organizations and individuals voiced concerns over the effects of the proposed action on public health and safety, including effects from EW sites and aircraft overflights. These issues are analyzed in section 4.14, Public Safety and Hazardous Materials.

- *Maps.* Several individuals requested inclusion of detailed maps of the proposed sites. General location maps are included in Chapter 2, and detailed maps are included in Appendix C.

Draft EIS

The public was invited to review and comment on the Draft EIS. A notice of availability was published in Federal Register Volume 64, pages 44235-44236, on August 13, 1999, and public notices were mailed to those on the distribution list (Chapter 6). Ads were published in the Reno Gazette Journal on August 13 and 14, 1999, in the Carson Appeal on August 13 and 14, 1999, in the Battle Mountain Bugle on August 17 and 19, 1999, in the Lahontan Valley News on August 13 and 14, 1999, in the Mineral County Independent on August 18, 1999, in the Lovelock Review-Miner on August 19, 1999, in the Elko Daily Free Press on August 13 and 14, 1999, and in the Eureka Sentinel on August 19, 1999. The Draft EIS was circulated for public and agency review from August 13, 1999, to September 13, 1999; the review period was extended to November 12, 1999, at the request of the public. This public comment period provided an opportunity for the public to review the issues addressed in the impact analysis and to offer comments on any aspect of the process.

Public hearings were held on September 8, 1999, in Eureka, Nevada, on September 9, 1999, in Austin, Nevada, on September 21, 1999, in Gabbs, Nevada, on September 22, 1999, in Fallon, Nevada, and on September 23, 1999, in Reno, Nevada, to formally receive verbal and written comments on the Draft EIS. The locations, dates, and times of the meetings were announced in the media and were included in a letter mailed to those on the distribution list. Five individuals attended and two people spoke at the public hearing in Eureka, 27 individuals attended and six people spoke at the public hearing in Austin, 39 individuals attended and one person spoke at the public hearing in Gabbs, 16 individuals attended and three people spoke at the public hearing in Fallon, and 26 individuals attended and five people spoke at the public hearing in Reno. During the public review process, verbal and written comments were received from approximately 70 agencies, organizations, and individuals. Comments and responses to the comments are provided after Chapter 9 in the Response to Comments section of this Final EIS.



2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

CHAPTER 2
ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter presents the alternatives selection process, the proposed action and alternatives considered in detail, standard operating procedures employed by the proposed action and alternatives, alternatives considered but eliminated, and the preferred alternative. A summary of the relative environmental impacts of the proposed action, alternatives to the proposed action, and the no action alternative is provided at the end of this chapter. Detailed environmental consequence analyses and proposed mitigations are presented in Chapter 4.

The proposed action assessed in this environmental impact statement (EIS) includes developing additional electronic warfare (EW) sites, developing target improvements at B-17 and B-19, developing additional tracking instrumentation subsystem (TIS) sites, providing fiber optic cable to B-16 and B-19, utilizing Navy-administered lands in Dixie Valley for close air support training, performing Hellfire missile training and high altitude weapons delivery training at B-17 and B-20, and changing airspace configuration and hours of operation. These actions satisfy different training requirements and may be implemented independent of one another.

Navy training requirements and the changes proposed by the Naval Strike and Air Warfare Center (NSAWC) to meet training requirements actions are discussed in detail in the FRTC Requirements Document (US Navy 1998a), available at the Bureau of Land Management (BLM) Carson City and Battle Mountain Field Offices. These training requirements have undergone independent validation by the Institute for Defense Analysis (IDA), performed under contract to the BLM (IDA 1999). This report also is available at the BLM Carson City and Battle Mountain Field Offices. The executive summary of the IDA Report is included in Appendix B.

2.1 ALTERNATIVES FORMULATION PROCESS

In developing potential alternatives, the Navy and BLM coordinated a number of actions, including the following:

- NSAWC assessed current and future training needs and operational requirements of NAS Fallon and reported these training requirements in the FRTC Requirements Document (US Navy 1998a).
- The BLM contracted with IDA for an independent critique of these training requirements (IDA 1999).
- The Navy and BLM invited federal, state, and local agencies and Native American tribes with special expertise related to the proposed action to be cooperating agencies.

- The Navy and BLM established an interdisciplinary team of environmental planners, training range operators, natural resource specialists, ordnance experts, flight commanders, and real estate specialists.
- The Navy and BLM hosted a prescoping meeting to discuss the requirements document and identify possible alternatives to the actions contained within the requirements document. The meeting was attended by representatives of NAS Fallon; the US Navy Engineering Field Activity West and Chief of Naval Operations; BLM Carson City and Battle Mountain Field Offices; Fallon Paiute-Shoshone Tribe, Yomba Shoshone Tribe, and Walker River Paiute Tribe; state of Nevada Department of Environmental Protection, Division of State Lands, Department of Transportation, and Division of Wildlife; Eureka and Churchill counties; city of Fallon; and Rural Alliance for Military Accountability.
- The Navy and BLM conducted public scoping meetings in Eureka, Austin, Fallon, and Reno, Nevada.

From this process, alternatives to the individual components of the requirements document that require detailed NEPA analysis were developed. To determine if the alternatives were reasonable and would meet the purpose and need, evaluation criteria were established. In order for an alternative to be considered in detail, it had to fulfill the following criteria:

- Meet the training requirements of NAS Fallon;
- Be technically feasible;
- Minimize reasonably anticipated effects on the environment to the greatest extent possible; and
- Protect the public from potential safety hazards related to training.

2.2 Proposed Action and Alternatives Considered in Detail

The proposed action evaluated in the EIS is the implementation of actions to meet tactical and strategic training mission requirements. Three alternatives to the proposed action were identified for detailed review. The proposed action and each alternative includes a mix of the following components: developing new EW sites, developing new TIS sites, developing additional targets at B-17 and B-19, laying fiber optic cable, performing close air support training on Navy-administered lands in the Dixie Valley, performing Hellfire missile training and high altitude weapons delivery training at B-17 and B-20, and implementing changes to special use airspace. A no action alternative also is identified. The proposed action and alternatives are summarized in Table 2-1. Standard operating procedures, which would be the same for the proposed action and each alternative, are discussed in Section 2.3.

2.2.1 Proposed Action (Four Valleys-Fixed)

Under the proposed action, EW sites, TIS sites, B-17 and B-19 target developments, fiber optic cable routes, Hellfire missile training and high altitude weapons delivery training at B-17 and B-20, and special use airspace designations would be developed or implemented. The BLM or appropriate federal agencies would issue rights-of-way to the Navy for sites on public lands, and the Navy would develop the sites as detailed below.

EW Sites. Under the proposed action, four fixed EW sites would be developed on public lands, including one in Edwards Creek Valley (EW-71), one in Gabbs Valley (EW-72), one in Smith Creek Valley (EW-73), and one in Big Smoky Valley (EW-74). Three fixed EW sites would be developed on Navy-administered land, including one in north Dixie Valley (EW-75), one within B-19 (EW-76), and one within B-20 (EW-77). An existing EW site on public land in the Dixie Valley, EW-10, would be enlarged to approximately four acres (Figure C-15, Appendix C), and a new road would be built around the perimeter. The locations of these sites are shown on

Table 2-1
Summary of Alternatives

	EW Sites	TIS Sites	B-17 Development	B-19 Development	Fiber Optic Cable	Hellfire Missile Training	Dixie Valley Development	High Altitude Weapons Delivery	Special Use Airspace
Proposed Action	• Three 5.7-acre fixed sites and associated powerlines and roads on Navy land • Up to 15 mobile sites on Navy land in Dixie Valley • Fully expand EW Site 10 on public land in the Dixie Valley • Four 5.7-acre fixed sites and associated powerlines and roads on public land in Gabbs, Edwards Creek, Smith Creek, and Big Smoky Valleys	Four 16-foot by 16-foot TIS sites on public land	• Develop helicopter ordnance/ gunnery target • Develop live mortar range	Develop helicopter ordnance/ gunnery target	Cable route to B-16 and B-19 along existing roads using new and existing rights-of-way and new easements, as required	Perform Hellfire missile training at B-17 and B-20	Close air support training, including laser marking	High altitude weapons delivery training with a ceiling of 35,000 feet MSL (FL350)	• Disestablish R-4802 at B-20 • Establish new restricted area airspace over existing restricted area airspace from 18,000 feet MSL (FL180) to 35,000 feet MSL (FL350) • Adjust the times of use of the Reno MOA
Alternative 1	• Three 5.7-acre fixed sites and associated powerlines and roads on Navy land • Up to 15 mobile sites on Navy land in Dixie Valley • Minimally expand EW Site 10 on public land in the Dixie Valley • Four 3.0-acre fixed sites and associated powerlines and roads on public land in Gabbs, Edwards Creek, Smith Creek, and Big Smoky Valleys • 18 mobile sites up to 1/3 acre (4 or 5 per valley) on public land	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action

Table 2-1
Summary of Alternatives *(continued)*

	EW Sites	TIS Sites	B-17 Development	B-19 Development	Fiber Optic Cable	Hellfire Missile Training	Dixie Valley Development	High Altitude Weapons Delivery	Special Use Airspace
Alternative II	• Three 5.7-acre fixed sites and associated powerlines and roads on Navy land • Up to 15 mobile sites on Navy land in Dixie Valley • Minimally expand EW Site 10 on public land in the Dixie Valley • Two 5.7-acre fixed sites and associated powerlines and roads on public land in Gabbs and Edwards Creek Valleys • Two fixed communication hubs on public land in Big Smoky and Smith Creek Valleys • 20 mobile sites up to 1/3 acre (5 per valley) on public land	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Alternative III	• Three 5.7-acre fixed sites and associated powerlines and roads on Navy land • Up to 15 mobile sites on Navy land in Dixie Valley • Fully expand EW Site 10 on public land in the Dixie Valley • One fixed communication hub in Smith Creek Valley and three combination fixed comm hub/mobile EW sites (one each in other valleys) • 19 mobile sites up to 1/3 acre (4 or 5 per valley) on public land	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	High altitude weapons delivery training with a ceiling of 30,000 feet MSL (FL300)	Same as Proposed Action except: • Establish new restricted area airspace over existing restricted area airspace from 18,000 feet MSL (FL 180) to 30,000 feet MSL (FL 300)
No Action Alternative	No new EW sites	No new TIS sites	No new development at B-17	No new development at B-19	No fiber optic cable route to B-16 and B-19	No Hellfire missile training	No new development in Dixie Valley	No high altitude weapons delivery training	No airspace changes

Figure 2-1. No mobile EW sites would be developed on public lands, but up to 15 mobile EW sites would be developed on Navy-administered lands in the Dixie Valley. The EW site subsection of Section 2.2.2, Alternative I, describes the development of and equipment that would be used on these mobile sites.

Each fixed EW site would be 5.7 acres in size (approximately 500 feet by 500 feet) (Figure 2-2). The sites would be bladed, leveled, graveled, and surrounded by an eight-foot chain-link security fence with vehicle and personnel access gates. Equipment and facilities at the sites would include an intrusion detection system and/or video surveillance system for security, a command and control shelter, a communication shelter with a small tower or guyed pole for antenna installation, maintenance and other support shelters, parking areas, portable toilet facilities, primary and backup diesel or gasoline generators with power converters and fuel tanks (fuel tanks would have secondary containment), and three to six EW systems. The height of the equipment would vary, but no piece of equipment would rise more than 80 feet above ground surface. Fixed EW site lighting would include regular white lighting (e.g., porch lights to illuminate sidewalks and yard lights when maintenance is being done on equipment) and filtered red and/or blue warning lights that indicate when radars are operational. Lighting would be turned off when the equipment is not in use and when operators leave the sites. Roads and commercial powerlines would be provided to each site. Where necessary, roads would be improved to BLM standards with a three-inch layer of road base on the existing road to a 12-foot width. A 40-foot right-of-way corridor would run to those sites where commercial powerlines would be installed. Table 2-2 provides site acreages associated with development of EW sites. Detailed maps of the exact locations and individual site configurations are provided in Appendix C.

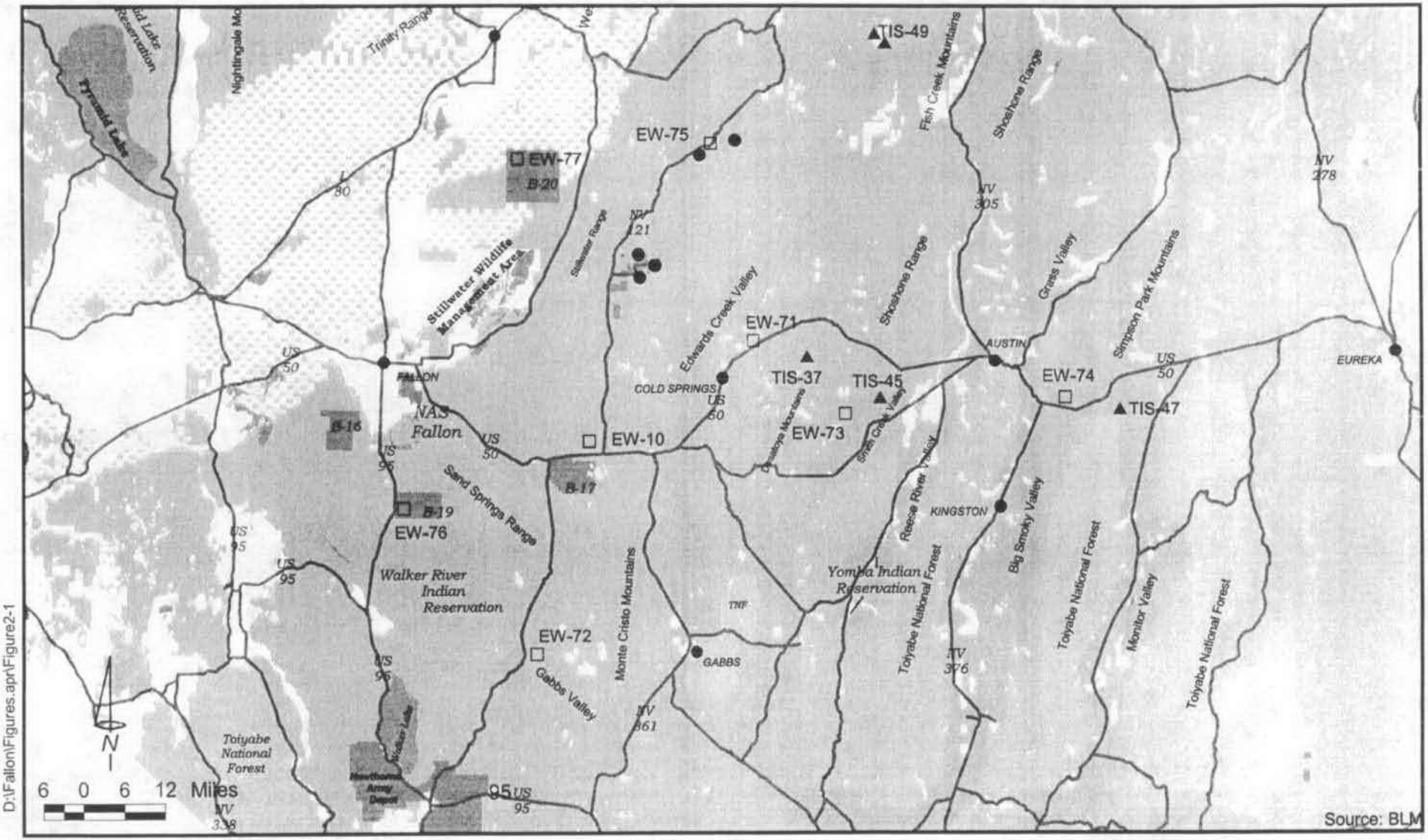
Each EW site would be staffed with four to six personnel five days per week. During air wing training and other training events, the sites could be staffed seven days per week. In addition to the daily work force, routine visits would be required for quality control, communication systems, fuel delivery, generator maintenance, and for other support personnel. Up to 10 personnel and their families are expected to relocate to Lander County to staff the Big Smoky Valley and Smith Creek Valley sites.

TIS Sites. The proposed action would include development of four 16-foot by 16-foot TIS sites on BLM-administered lands. TIS-37 would be developed on a peak south of the highway across from New Pass; TIS-45 would be developed on a peak north of Railroad Pass on the east side of the Smith Creek Valley; TIS-47 would be developed south of Hickison Summit between Big Smoky and Monitor Valleys; and TIS-49 would be collocated on one of two existing communication sites north of Mt. Moses in north Dixie Valley. Figure 2-1 shows the general location of the TIS sites; detailed maps are provided in Appendix C.

The TIS sites would be developed by digging five small anchor holes and constructing a 2-foot by 2-foot center pad for the mast assembly; no grading of the sites would be required. Each TIS site would include a solar panel, which provides electrical power to the system, four antenna transceivers, microwave transmitter, microwave receiver, and battery storage and electronic component storage units. The mast assembly on which the transmitters and receiver are mounted is approximately 20 feet high. Installation and maintenance would be conducted using helicopters; no new roads would be required.

B-17 Development. Under the proposed action, the Navy would increase training flexibility at B-17 by developing live mortar ranges and helicopter ordnance and gunnery targets (Figure 2-3).

B-19 Development. Under the proposed action, the Navy would develop a rough terrain helicopter gunnery target on already disturbed areas in the



D:\Fallon\Figures.apr\Figure2-1

EW-75, EW-76, and EW-77 are on Navy-administered land.

Note: TIS-49 will be located at one of two non-Navy communication sites.

Legend

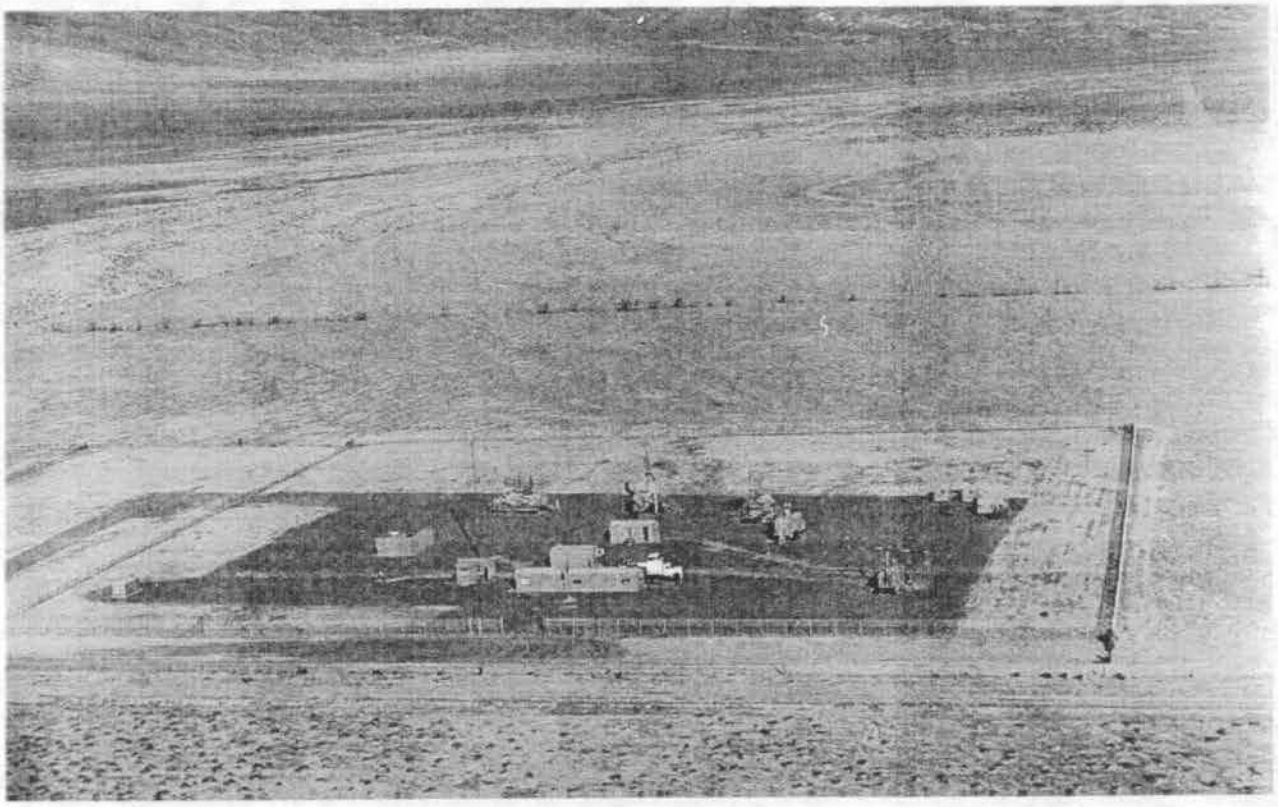
- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge
- Roads
- Fixed EW Site
- TIS Site
- Areas of Dixie Valley Mobile Sites (3 or 4 sites within this area)

Tetra Tech, Inc

Proposed Action EW and TIS Sites

NAS Fallon, Nevada

Figure 2-1



Manned EW Site.

Under the Proposed Action, Alternative I and Alternative II, manned EW sites, similar to the one pictured, would be developed on public lands.

Manned EW Sites

NAS Fallon, Nevada

Source: NAS Fallon

Figure 2-2

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Table 2-2
Proposed Action-Electronic Warfare Site Acreages

EW Site	Site Parameters (acres)	Parking Area (acres)	Access Road to be Improved (acres)	Utility Line[a] (acres)	Total Acreage Affected
EW Site 71 (Edwards Creek)	500' x 500' 5.7	75' x 12' 0.02	8,976' x 12' 2.47	1,200' x 40' 1.10	9.29
EW Site 72 (Gabbs)	500' x 500' 5.7	75' x 12' 0.02	18,480' x 12' 5.09	6,300' x 40' 5.82	16.63
EW Site 73 (Smith Creek)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	16,600' x 40' 15.2	20.92
EW Site 74 (Big Smoky)	500' x 500' 5.7	75' x 12' 0.02	7,920' x 12' 2.18	19,000' x 40' 17.40	25.30
EW Site 75 (Dixie Valley)	Various[b] Approx. 1.0	75' x 12' 0.02	Existing access satisfactory; no improvement needed	900' x 40' 0.83	1.85
EW Site 76 (B-19)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 77 (B-20)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 10	420' x 410' 3.95	75' x 12' 0.02	1,000' x 12' 0.28	0[d]	4.25
Mobile EW Sites on Navy Dixie Valley lands	15 sites 5.0[e]	N/A	N/A	N/A	5.0
Total Acreage	**44.15**	**0.16**	**10.02**	**40.35**	**94.68**

N/A: Not Applicable

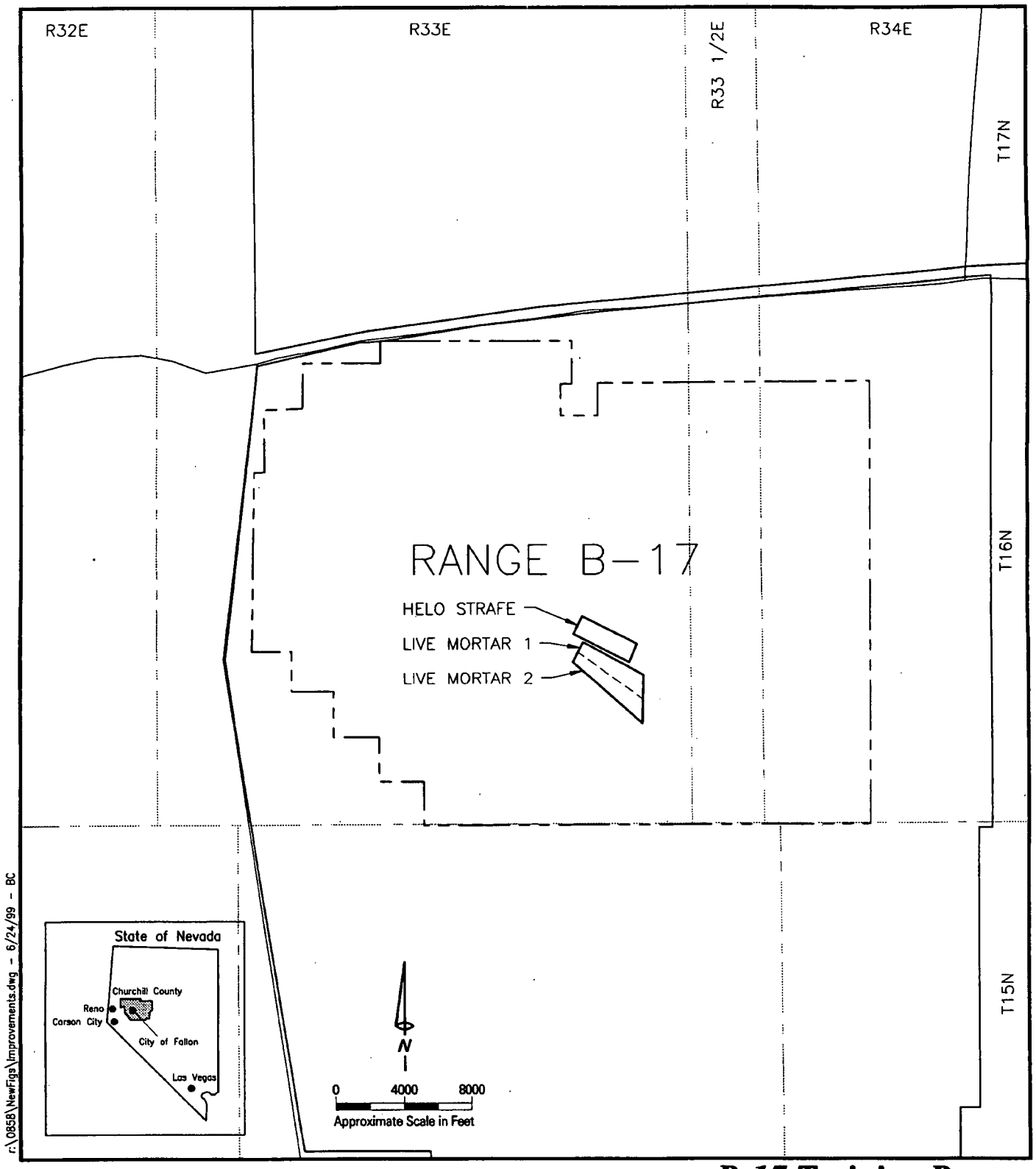
[a]The acreage that the powerlines would affect includes a 40-foot right-of-way for the length of the line; this area would be reclaimed.

[b]EW Site 75 would consist of small developments on a larger parcel of Navy-administered land (see Figure C-11).

[c]EW Sites 76 and 77 would be built along existing powerlines.

[d]EW Site 10 already has power utilities; no additions are required.

[e]Each mobile site would be up to one-third acre in size.



B-17 Training Range Improvements

NAS Fallon, Nevada

Source: NAS Fallon

Figure 2-3

north-central portion of the B-19 training range (Figure 2-4).

Fiber Optic Cable. Under the proposed action, fiber optic cable would be run from the NAS Fallon air station to the B-16 and B-19 training ranges (Figure 2-5). The cable route would run south then west from the air station along Pasture Road and south along Highway 95. The route would turn west to B-16 off Highway 95 along an existing unimproved road; farther south the route would turn east off Highway 95 to B-19 across a quarter-mile of public land recently withdrawn under the Range Safety and Training Public Land Withdrawal EIS (US Navy 1998c). The Navy would obtain easements or rights-of-way to run the cable in existing non-Navy rights-of-way corridors along developed roads and would need to acquire new rights-of-way from BLM to follow the unimproved road to B-16. The fiber optic cable would be installed using direct burial techniques. The cable would be buried over three feet underground and covered up right after the cable was in place. In some cases, cable may be strung on existing powerlines.

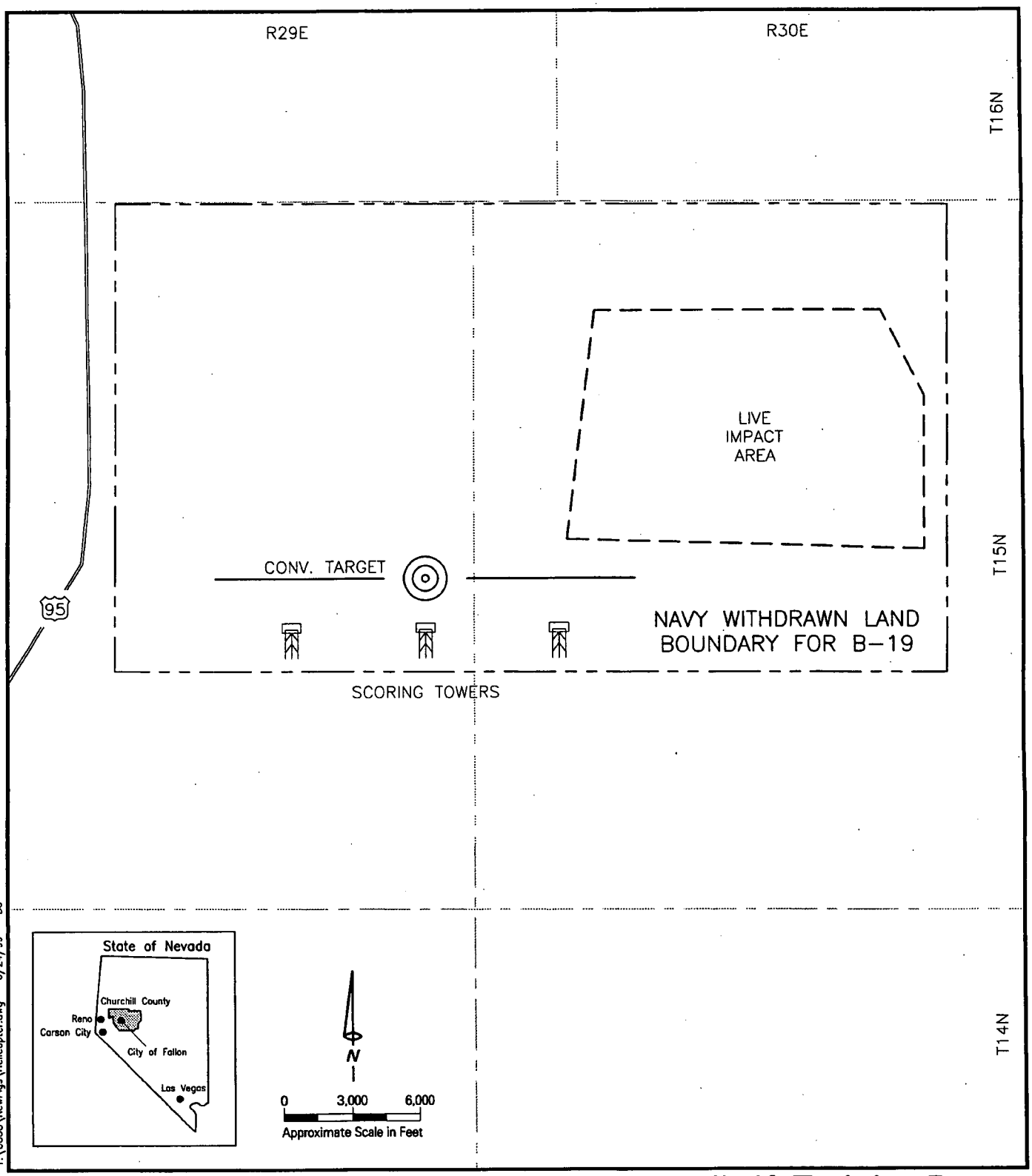
Utilization of Dixie Valley Lands. Under the proposed action, the Navy would perform close air support training, including laser spotting, on Navy-owned lands in the Dixie Valley. Laser spotting entails highlighting a target with a laser from a ground position to identify the target for (simulated) elimination by aircraft. An observation tower has been constructed, and six target locations have been identified in full compliance with all safety regulations (US Navy 1998h). Four of these target locations are north, east, and south of the tower, while two target locations are west of the tower across Settlement Road (Figure 2-6).

Hellfire Missile Training. Under the proposed action, the Navy would perform Hellfire missile training at the B-17 and B-20 training ranges. Hellfire missile training entails firing missiles from helicopters in restricted area airspace to targets located in the heavy impact areas on B-17 and B-20. Categorical Exclusions allow NAS Fallon to conduct test Hellfire missile ordnance deliveries at B-17 and at B-20 to collect and document empirical data to verify that the weapons footprint can be contained within existing boundaries of the B-17 and B-20 training ranges (US Navy 1998g, 1999c); all test missiles fired to date have been contained within the existing weapons safety footprint.

High Altitude Weapons Delivery Training. Under the proposed action, the Navy would conduct high altitude weapons delivery training at the B-17 and B-20 training ranges. By establishing new restricted area airspace over existing restricted area airspace as described below, the Navy could perform air-to-ground ordnance delivery training between 18,000 feet MSL (FL180) and 35,000 feet MSL (FL350), or up to approximately 31,000 feet above ground level. No increase in flight operations would result from expanding air-to-ground training capabilities; rather, a portion of the ordnance deliveries that now take place in the existing restricted areas (airspace over the training ranges up to 18,000 feet MSL) would occur in the higher restricted areas.

Special Use Airspace Configuration Adjustments. The Navy proposes to redesignate some restricted area airspace, to disestablish other restricted area airspace, to establish new restricted area airspace, and to effect a change in times of use of the Reno military operations area (MOA). No increase in lateral boundaries of existing airspace coverage would result from these changes, and no new MOAs would be created in the eastern part of the FRTC. Changes in operating hours and altitudes would require rulemaking in accordance with FAA Order 7400.2, Chapter 2, Section 1, "Rulemaking" and Chapter 29, "Restricted Areas." The airspace adjustments are as follows:

- Disestablish R-4802 at B-20 (becomes part of R-4813). Adjust the hours of operation of the Reno MOA from the current 10:00 AM to 6:00 PM, Tuesday through Saturday, to 8:00 AM to 6:00



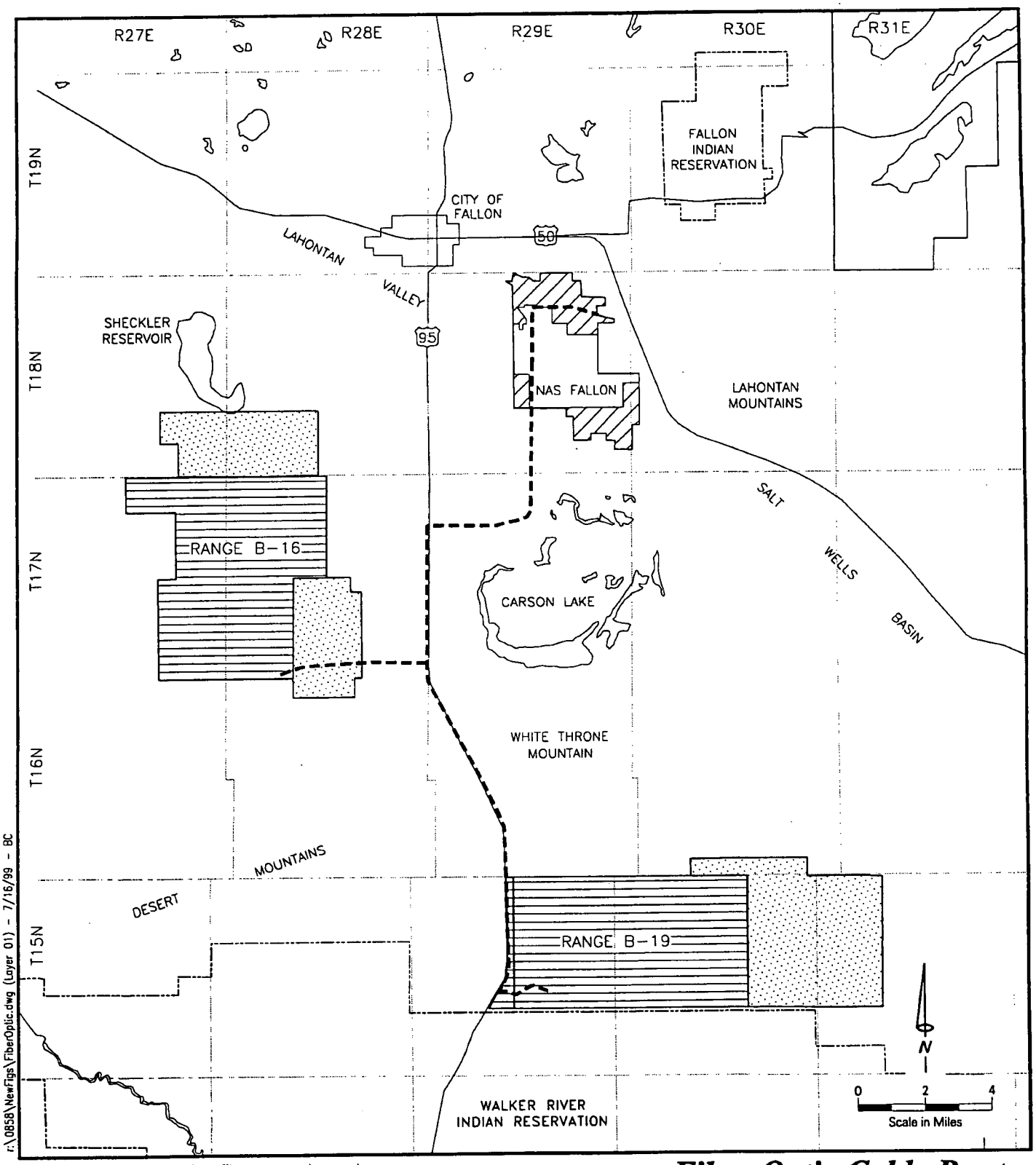
The helicopter gunnery range will be within the live impact area.

B-19 Training Range Improvements

NAS Fallon, Nevada

Source: NAS Fallon

Figure 2-4



Under the Proposed Action, fiber optic cable would be run to B-16 and B-19 using new and existing rights-of-way.

Legend

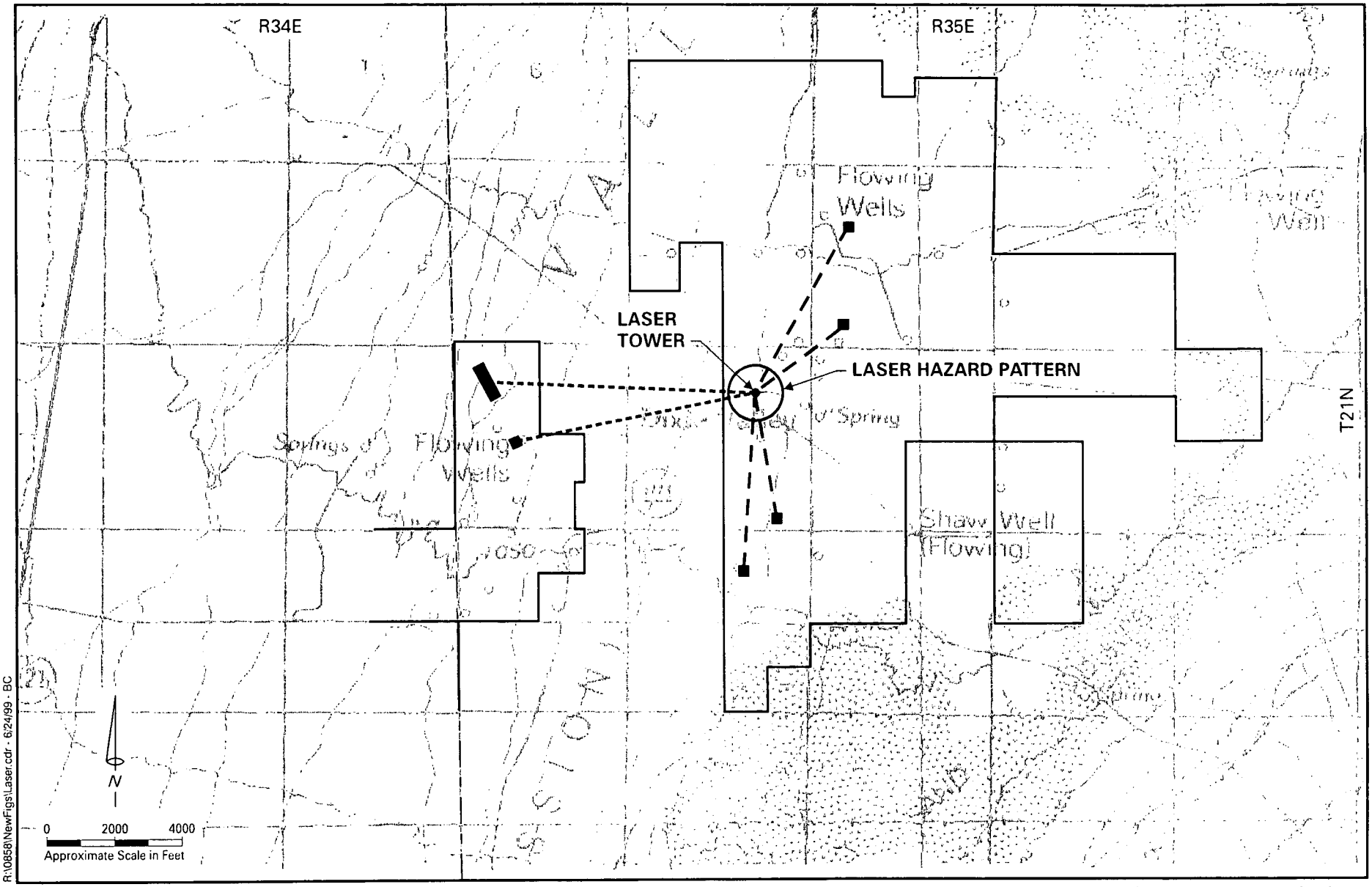
- Fiber Optic Cable Route
- Land Proposed for Withdrawal under the Range Safety and Training Public Land Withdrawal EIS
- NAS Fallon Training Range

Fiber Optic Cable Route

NAS Fallon, Nevada

Figure 2-5

Source: NAS Fallon



The hazard pattern for all types of lasers used would be entirely contained on Navy-administered land.

Legend

- Laser Targeting using only Low-power Lasers
- Laser Targeting using all Laser Types, including High-power Lasers
- Laser Spotting Targets
- Dixie Valley Lands

Source: NAS Fallon

Close Air Support Training on Dixie Valley Lands

NAS Fallon, Nevada

Figure 2-6

PM, Monday through Friday, and other times by notice to airmen (NOTAM) to correspond to the normal training schedule of NAS Fallon.

- Redesignate R-4804 at B-17 and R-4813 at B-20 to R-4804A and R-4813A, respectively. These restricted areas would include existing restricted area airspace up to but not including 18,000 feet MSL (FL180).
- Establish joint-use R-4804B and R-4813B above redesignated restricted areas from 18,000 feet MSL (FL180) to 35,000 feet MSL (FL350).

2.2.2 Alternative I (Four Valleys-Fixed and Mobile)

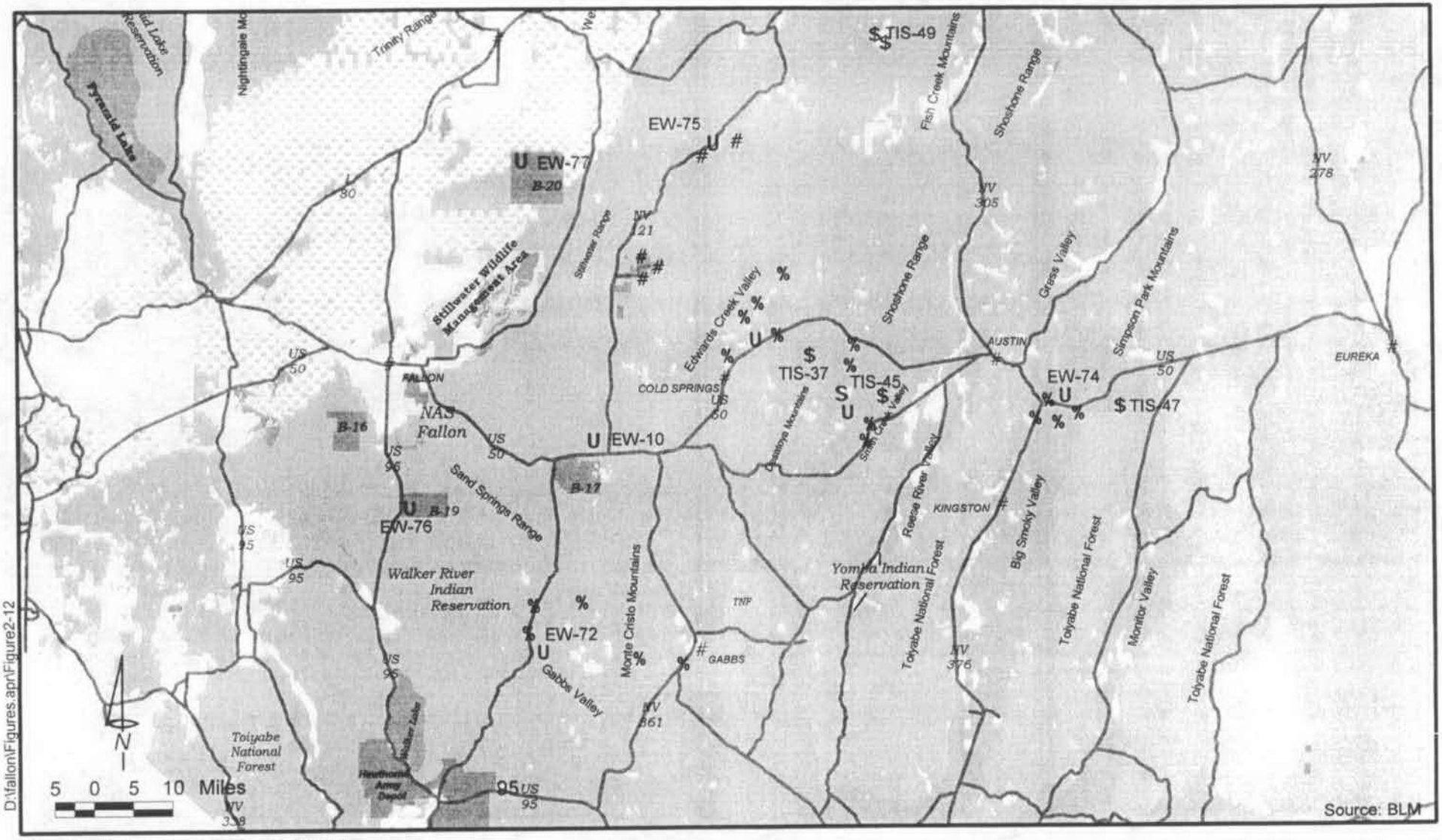
Under Alternative I, development of EW sites on Navy-administered land, development of TIS sites, development of B-17 and B-19, development of fiber optic cable routes, utilization of Dixie Valley lands, high altitude weapons delivery training, and special use airspace changes would be the same as described for the proposed action. Differences between the proposed action and Alternative I are described below.

EW Sites. Under Alternative I, four three-acre (350 feet by 375 feet) fixed EW sites would be developed on public lands in Edwards Creek Valley (EW-71), Gabbs Valley (EW-72), Smith Creek Valley (EW-73), and Big Smoky Valley (EW-74) (Figure 2-7). The fixed sites would be developed as described for the proposed action and would contain similar support equipment. Roads and commercial powerlines would be provided to each site. As under the proposed action, roads would be improved where necessary by placing a three-inch layer of road base on the existing road to a 12-foot width. A 40-foot right-of-way corridor would run to the sites for commercial power. As also described under the proposed action, up to 10 personnel and their families are expected to relocate to Lander County to staff the Big Smoky Valley and Smith Creek Valley sites.

Development of EW-10 would be less than under the proposed action. The existing EW-10a adjacent to EW-10 would be expanded from its current size of 0.18 acres to 0.33 acres (Figure C-16, Appendix C). Power and communication connections would be installed underground from EW-10.

The smaller fixed EW sites in the eastern valleys would be supplemented with four or five mobile EW sites in each valley for a total of 18 mobile sites (Figure 2-7). Each site would be up to one-third acre in size and would be close to existing roads. No commercial power would be required. The mobile sites would be developed by blading, leveling, and grading the area as needed. Where possible, existing disturbed areas have been chosen to minimize physical ground disturbance. The sites would not be fenced, and the roads along which the sites are developed would not be closed. Mobile EW sites would have filtered red and/or blue warning lights and occasional external lighting or internal lights on the mobile maintenance-type trailers. There would be two types of EW systems used at the mobile sites: mobile acquisition radar systems (search and height-finder radar) and mobile fire control (shooter) systems. When not in use, mobile EW site equipment would be parked on fixed EW sites or in a leased or purchased compound in Austin, Nevada.

Mobile acquisition systems provide a more realistic simulation of the real world hostile threat environment than permanent EW systems by allowing acquisition radar to be placed at different locations and spread out over larger distances. Mobile acquisition site equipment would include a long-range search radar system with a height-finder radar system, a generator/fuel truck, heating, ventilation, and air conditioning (HVAC) equipment, a maintenance/support trailer, and a communications antenna with mounting pole (Figure 2-8). A low-boy tractor trailer would transport the radar equipment to the site and either would remain with the equipment or would off-load the equipment and move to another location. Likewise, a personnel vehicle would bring the maintenance/support trailer to the site and may or may not remain at the site. Mobile acquisition sites would be used during air



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Alternative I differs from the Proposed Action in that fixed EW sites on public lands are smaller and supplemented by mobile EW sites.

Note: TIS-49 will be located at one of two non-Navy communication sites.

Legend

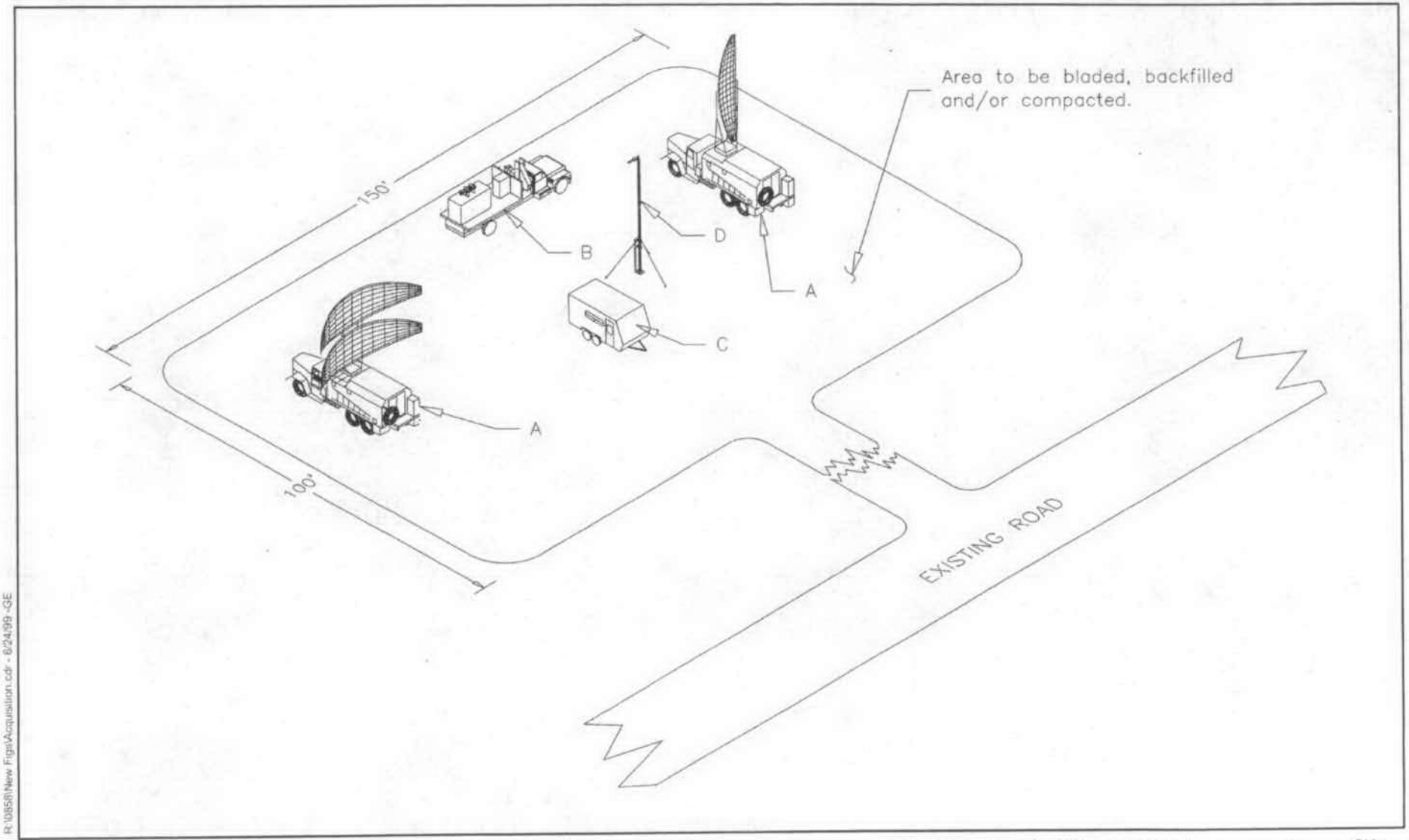
- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge
- Roads
- U Fixed EW Site
- % Mobile EW Site
- $ TIS Site
- # Areas of Dixie Valley mobile Sites (3 or 4 sites within this area)

Tetra Tech, Inc

Alternative I
EW and TIS Sites

NAS Fallon, Nevada

Figure 2-7



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A low-boy tractor trailer would deliver equipment to the mobile acquisition site, and a personnel vehicle would deliver the support trailer.

Legend

A	Radar Systems
B	Power Equipment Vehicles
C	Maintenance/Support Trailer
D	Antenna Mast

Typical Mobile EW Acquisition Site

NAS Fallon, Nevada

Source: NAS Fallon

Figure 2-8

wing training, Strike Fighter Tactics Instructor training, Weapons Tactics Instructor training, Strike Fighter Advanced Readiness Program training, unit level training, and other special projects training. Up to two sites per valley would be occupied with mobile acquisition radar systems for no more than two weeks at a time, and a maximum of 20 training evolutions would use these systems per year. Security personnel would stay with equipment remaining on-site overnight.

Mobile shooter systems simulate the movement of hostile radar systems, such as surface-to-air missiles and anti-aircraft artillery, as is typical in the real world threat environment. Mobile shooter site equipment would include a single-fire control radar representing the threat, a generator/fuel truck, HVAC equipment, a maintenance/support trailer, and a communications antenna with mounting pole (Figure 2-9). As with mobile acquisition sites, a low-boy and a personnel vehicle would deliver the equipment and maintenance/support trailer to the site and may remain at the site or move to another location as needed. Sites would be occupied with mobile shooter radar systems for no more than 48 hours at a time.

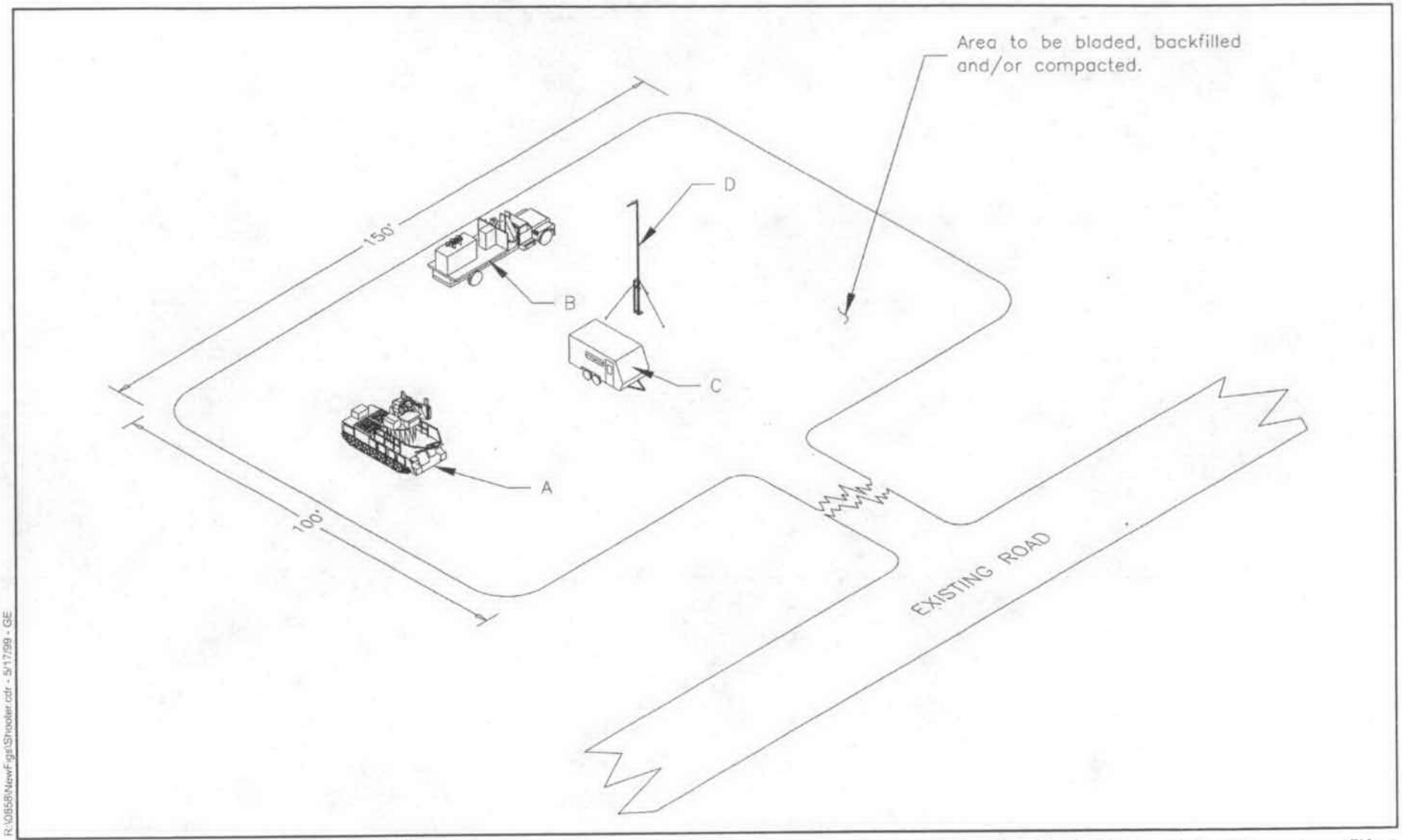
Given projected training evolutions and EW system availability, the Navy has determined an estimated overall mobile site occupancy of up to 32 percent over the next five years. Based on current assets, capability to mobilize, and available man-power, the overall utilization may begin with only two or three sites being simultaneously occupied. During the five-year period, as more assets become available the overall utilization might increase to include use of eight simultaneous sites. Specific utilization of any given site would depend on the training objectives, which would change as dictated by individual training scenarios. In other words, a given site may get routine use or it may only be used a few days per year. Figure 2-10 depicts mock-ups of a mobile acquisition radar site and a mobile shooter site. Table 2-3 provides physical site sizes associated with development of fixed and mobile EW radar sites. Detailed maps of the exact locations and individual site configurations are provided in Appendix C.

2.2.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile) (Preferred Alternative)

Alternative II has been identified as the Preferred Alternative in this Final EIS (Section 2.5). Under Alternative II, development of EW sites on Navy-administered land, development of TIS sites, development of B-17 and B-19, utilization of Dixie Valley lands, development of fiber optic cable routes, Hellfire missile training and high altitude weapons delivery training, and special use airspace modifications would be the same as those described for the proposed action. The expansion of EW Site 10 would be the same as that described for Alternative I. Differences among Alternative II and the other alternatives are described below.

EW Sites. Under Alternative II, two 5.7-acre fixed sites would be developed on public lands in Edwards Creek Valley (EW-71) and Gabbs Valley (EW-72), and no fixed EW sites would be developed in Smith Creek Valley and Big Smoky Valley. To compensate for the lack of fixed EW sites in these two valleys, fixed communication relay towers on one-tenth acre of land would be developed. These sites would consist of a small (10-foot by 10-foot or less) metal or concrete building and antennas mounted on a 20- to 30-foot pole or mounted directly on the building. These sites would likely not be fenced. Five mobile EW sites would be developed in each valley, for a total of 20 mobile sites (Figure 2-11).

The development and use of mobile EW sites would be the same as that described under Alternative I. When not in use, mobile EW site equipment would be parked on fixed EW sites or in a leased or purchased compound in Austin, Nevada. Up to five personnel and their families are expected to relocate to Lander County to staff mobile sites. Table 2-4 provides site acreages associated with development of fixed and mobile EW sites. Detailed maps of the



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Mobile shooter sites simulate the movement of hostile radar systems, such as surface-to-air missile and anti-aircraft artillery systems.

NOTE: Site may be configured differently based on the existence of previously disturbed area and the geology of the site.

Legend

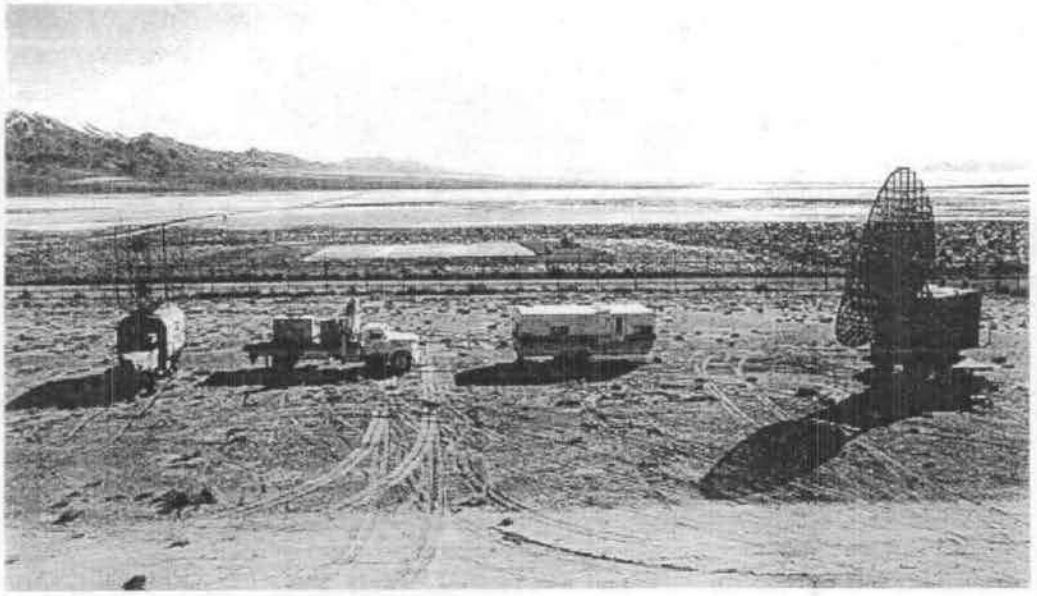
- A — Radar Systems
- B — Power Equipment Vehicle
- C — Maintenance/Support Trailer
- D — Antenna Mast

Source: NAS Fallon

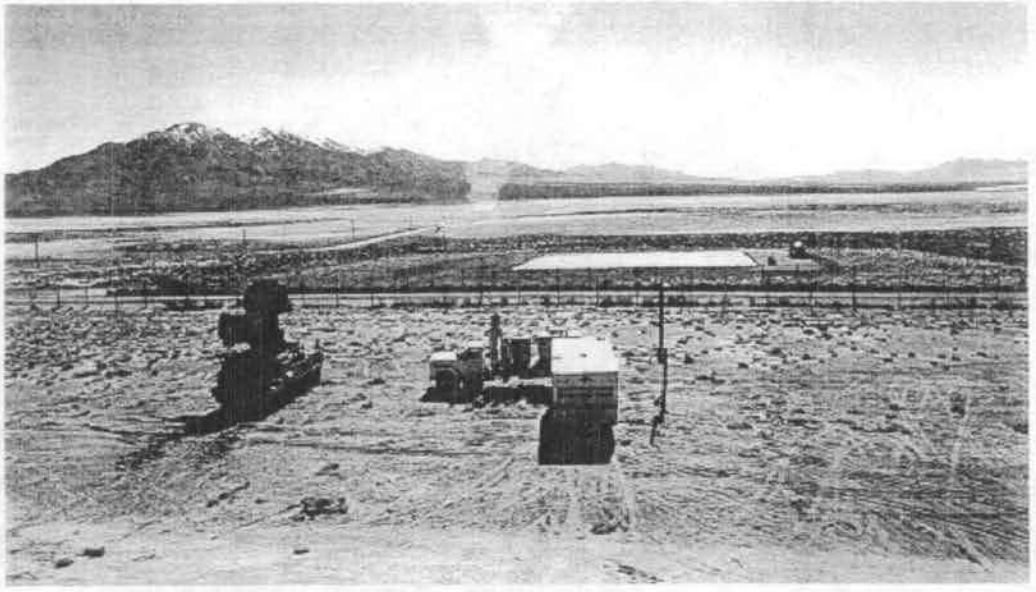
Typical Mobile EW Shooter Site

NAS Fallon, Nevada

Figure 2-9



Mock-up of mobile acquisition site.



Mock-up of mobile shooter site.

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Mobile acquisition sites would be occupied up to two weeks at a time; mobile shooter sites would be occupied up to 48 hours at a time.

Mock-Up of Occupied Mobile EW Sites

NAS Fallon, Nevada

Source: NAS Fallon

Figure 2-10

Table 2-3
Alternative I-Electronic Warfare Site Acreages

EW Site	Site Parameters (acres)	Parking Area (acres)	Access Road to be Improved (acres)	Utility Line[a] (acres)	Total Acreage Affected
EW Site 71 (Edwards Creek)	350' x 375' 3.0	75' x 12' 0.02	8,976' x 12' 2.47	1,200' x 40' 1.10	6.59
EW Site 72 (Gabbs)	350' x 375' 3.0	75' x 12' 0.02	18,480' x 12' 5.09	6,300' x 40' 5.82	13.93
EW Site 73 (Smith Creek)	350' x 375' 3.0	75' x 12' 0.02	Existing access satisfactory; no improvement needed	16,600' x 40' 15.2	18.22
EW Site 74 (Big Smoky)	350' x 375' 3.0	75' x 12' 0.02	7,920' x 12' 2.18	19,000' x 40' 17.40	22.60
EW Site 75 (Dixie Valley)	Various[b] Approx. 1.0	75' x 12' 0.02	Existing access satisfactory; no improvement needed	900' x 40' 0.83	1.85
EW Site 76 (B-19)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 77 (B-20)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 10	100' x 150' 0.33	75' x 12' 0.02	Existing access satisfactory; no improvement needed	300' x 40' 0.28[d]	0.63
Mobile EW Sites on Navy Dixie Valley lands	15 sites 5.0[e]	N/A	N/A	N/A	5.00
Mobile EW Sites on Public Land	18 sites 6.0[e]	various 0.12	Minor improvements to some sites may be required	N/A	6.12
Total Acreage	**35.73**	**0.28**	**9.74**	**40.63**	**86.38**

N/A: Not Applicable

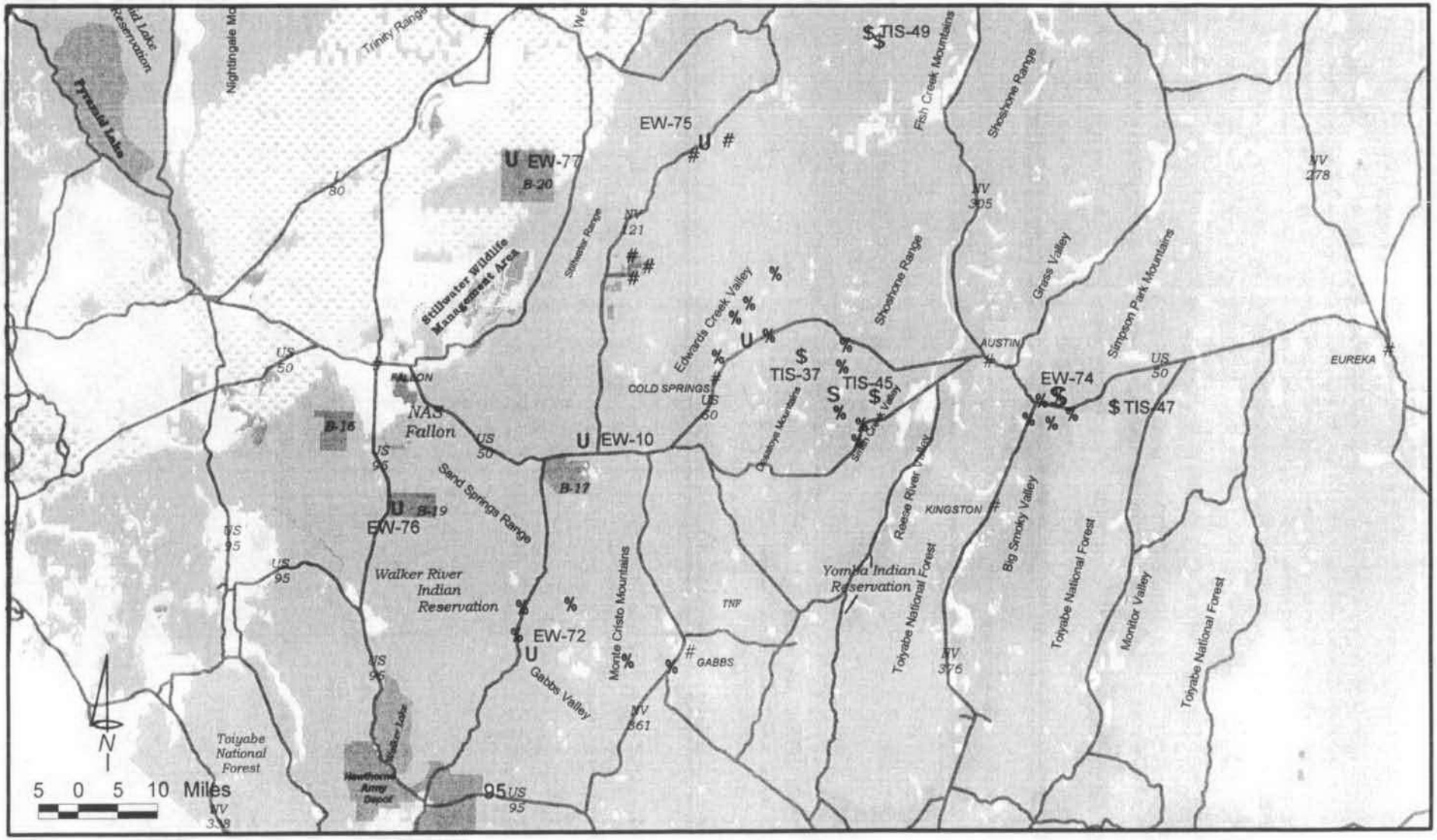
[a]The acreage that the powerlines would affect includes a 40-foot right-of-way for the length of the line; this area would be reclaimed.

[b]EW Site 75 would consist of small developments on a larger parcel of Navy-administered land (see Figure C-11).

[c]EW Sites 76 and 77 would be built along existing powerlines.

[d]EW Site 10 already has an access road and power utilities. Power and communications would be run underground between the existing EW Site 10 and the expansion site; an additional right-of-way may be required.

[e]Each mobile site would be up to one-third acre in size.



Alternative II differs from Alternative I in that no fixed EW sites would be developed in Smith Creek and Big Smoky Valleys.

Note: TIS-49 will be located at one of two non-Navy communication sites.

Legend

- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge

- Roads
- U Fixed EW Site
- % Mobile EW Site
- $ TIS Site
- S Fixed Communications Hub
- # Areas of Dixie Valley Mobile Sites (3 or 4 sites within this area)

Tetra Tech, Inc

Alternative II
EW and TIS Sites

NAS Fallon, Nevada

Figure 2-11

Table 2-4
Alternative II-Electronic Warfare Site Acreages

EW Site	Site Parameters (acres)	Site Driveway (acres)	Access Road to be Improved (acres)	Utility Line[a] (acres)	Total Acreage Affected
EW Site 71 (Edwards Creek)	500' x 500' 5.7	75' x 12' 0.02	8,976' x 12' 2.47	1,200' x 40' 1.10	9.29
EW Site 72 (Gabbs)	500' x 500' 5.7	75' x 12' 0.02	18,480' x 12' 5.09	6,300' x 40' 5.82	16.63
EW Site 75 (Dixie Valley)	Various[b] Approx. 1.0	75' x 12' 0.02	Existing access satisfactory; no improvement needed	900' x 40' 0.83	1.85
EW Site 76 (B-19)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 77 (B-20)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 10	100' x 150' 0.33	75' x 12' 0.02	Existing access satisfactory; no improvement needed	300' x 40' 0.28[d]	0.63
Communication Relay (Smith Creek)	0.10	N/A	N/A	N/A	0.10
Communication Relay (Big Smoky)	0.10	N/A	N/A	N/A	0.10
Mobile EW Sites on Navy Dixie Valley lands	15 sites 5.0[e]	N/A	N/A	N/A	5.00
Mobile EW Sites on Public Land	20 sites 6.7[e]	various 0.14	Minor improvements to some sites may be required	N/A	6.84
Total Acreage	**36.03**	**0.26**	**7.56**	**8.03**	**51.88**

N/A: Not Applicable

[a]The acreage that the powerlines would affect includes a 40-foot right-of-way for the length of the line; this area would be reclaimed.

[b]EW Site 75 would consist of small developments on a larger parcel of Navy-administered land (see Figure C-11).

[c]EW Sites 76 and 77 would be built along existing powerlines.

[d]EW Site 10 already has an access road and power utilities. Power and communications would be run underground between the existing EW Site 10 and the expansion site; an additional right-of-way may be required.

[e]Each mobile site would be up to one-third acre in size.

exact locations and individual site configurations are provided in Appendix C.

2.2.4 Alternative III (Four Valleys-All Mobile)

Under Alternative III, development of EW sites on Navy-administered land, expansion of EW Site 10, development of TIS sites, development of B-17 and B-19, development of fiber optic cable routes, Hellfire missile training, and utilization of Dixie Valley lands would be the same as those described for the proposed action. Differences among Alternative III and the other alternatives are described below.

EW Sites. Under Alternative III, no new fixed EW sites would be developed on public lands. To compensate for the lack of fixed EW sites in the four eastern valleys, a one-tenth acre fixed communication relay hub in Smith Creek Valley, one combination communication relay hub/mobile EW site in each of the other valleys, and 19 mobile EW sites would be developed (up to five sites per valley) (Figure 2-12). This alternative was evaluated in the IDA validation report (IDA 1999) on the FRTC Requirements Document (US Navy 1998a). As discussed in this report, an all mobile scenario may provide increased flexibility in training; however, communication technology is not yet advanced or readily available to allow NSAWC to implement an all mobile alternative at this time, there is a greater cost involved with an all mobile alternative, and NSAWC does not yet have the mobile EW equipment necessary to implement an all mobile alternative.

The development of mobile EW sites would be the same as described under Alternative I; without fixed EW sites mobile sites may be occupied more frequently and for greater lengths of time. When not in use, mobile EW equipment would be parked on fixed EW sites, such as the expanded EW Site 10, or in a leased or purchased compound in the Austin area. Table 2-5 provides site acreages associated with development of mobile EW sites. Up to five personnel and their families may relocate to Lander County to staff mobile sites. Detailed maps of the exact locations and individual site configurations are provided in Appendix C.

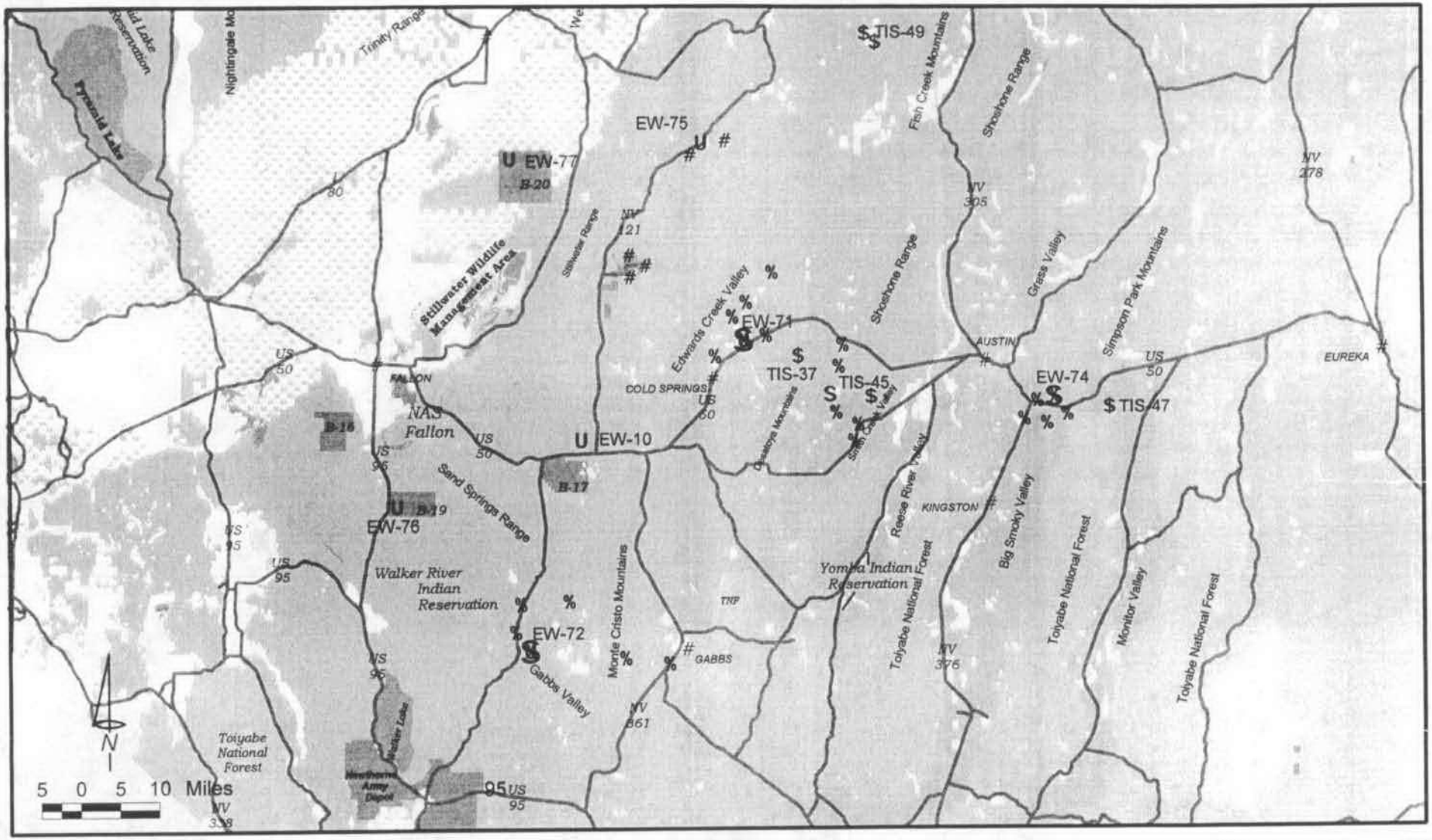
High Altitude Weapons Delivery Training. Under Alternative III, the Navy would conduct high altitude weapons delivery training at the B-17 and B-20 training ranges, as described under the proposed action. Instead of a ceiling of 35,000 feet MSL (FL350), the Navy would request a ceiling of 30,000 feet MSL (FL300) for new restricted area airspace. Ordnance delivery training therefore could be performed up to 30,000 feet MSL (FL300).

Special Use Airspace Configuration Adjustments. Under Alternative III, airspace designations would differ from those detailed under the proposed action. These differences relate to changes in high altitude weapons delivery training proposed under this alternative, as described above. No increase in lateral boundaries of existing airspace coverage would result from these changes, and no new MOAs would be created in the eastern part of the FRTC. The airspace adjustment requirements are as follows:

- Redesignate R-4804 at B-17 and R-4813 at B-20 to R-4804A and R-4813A. These restricted areas would include existing restricted area airspace up to 18,000 feet MSL. Establish joint-use R-4804B and R-4813B above redesignated restricted area airspace areas from 18,000 feet MSL to 30,000 feet MSL.

2.2.5 No Action Alternative

Inclusion of the No Action Alternative is prescribed by the Council on Environmental Quality regulations and serves as a benchmark against which federal actions can be evaluated (40 CFR 1502.11[d]). Under the No Action Alternative, no new EW sites, TIS sites, B-17 and B-19 target improvements, or fiber optic cable routes would be developed. Airspace changes, Hellfire missile training, and high altitude weapons delivery training would not occur. Present training activities would continue under existing conditions.



Alternative III differs from Alternative II in that no new fixed EW sites would be developed on Public Lands.

Note: TIS-49 will be located at two non-Navy communication sites.

Legend

- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge

- Roads
- U Fixed EW Site
- % Mobile EW Site
- $ TIS Site
- S Fixed Communications Hub
- # Areas of Dixie Valley Mobile Site (3 or 4 sites within this area)

Tetra Tech, Inc

Alternative III
EW and TIS Sites

NAS Fallon, Nevada

Figure 2-12

Table 2-5
Alternative III-Electronic Warfare Site Acreages

EW Site	Site Parameters (acres)	Site Driveway (acres)	Access Road to be Improved (acres)	Utility Line[a] (acres)	Total Acreage Affected
EW Site 75 (Dixie Valley)	Various[b] Approx. 1.0	75' x 12' 0.02	Existing access satisfactory; no improvement needed	900' x 40' 0.83	1.85
EW Site 76 (B-19)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 77 (B-20)	500' x 500' 5.7	75' x 12' 0.02	Existing access satisfactory; no improvement needed	0[c]	5.72
EW Site 10	420' x 410' 3.95	75' x 12' 0.02	1,000' x 12' 0.28	0[d]	4.25
Mobile EW Site on Navy Dixie Valley lands	15 sites 5.0[e]	N/A	N/A	N/A	5.00
Communication Hub (Smith Creek)[f]	0.10	N/A	N/A	N/A	0.10
Mobile EW Sites on Public Land [f]	22 sites 7.33[e]	various 0.14	Minor improvements to some sites may be required	N/A	7.47
Total Acreage	**28.78**	**0.22**	**0.28**	**0.83**	**30.11**

N/A – Not Applicable

[a]The acreage that the powerlines would affect includes a 40-foot right-of-way for the length of the line; this area would be reclaimed.

[b]EW Site 75 would consist of small developments on a larger parcel of Navy-administered land (see Figure C-11).

[c]EW Sites 76 and 77 would be built along existing powerlines.

[d]EW Site 10 already has an access road and power utilities; no additions are required.

[e]Each mobile site would be up to one-third acre in size.

[f]One site in each of the other valleys (Edwards Creek, Gabbs, and Big Smoky Valleys) would be a combination fixed communication hub/mobile EW site (see Figures C-1, C-3, C-5, and C-7).

2.3 STANDARD OPERATING PROCEDURES

For the proposed action and Alternatives I, II, and III, measures would be employed to reduce the level of impact to the environment. These measures, described below, are standard to Navy developments and are required by the BLM for actions taken on public lands. In addition, BLM would issue site-specific terms and conditions for rights-of-way grants.

Biological Surveys and Restrictions. Each potential site has been surveyed for biological resources (US Navy 1999g). Prior to surface disturbance, each site would be resurveyed if needed for the presence of sensitive species, sensitive habitats, or other occurrence that would preclude development of the site. Where appropriate, the site would be moved or site development would be delayed to avoid sensitive biological resources or sensitive periods of time, such as mating or nesting periods. If during the site surveys any sage grouse strutting grounds are identified within two miles, the Navy would place antiperching devices on powerline poles. If any ground-disturbing activity would occur during migratory bird nesting season (generally May through August), a biologist would survey the site to ensure that shrub-nesting birds would not be disturbed. Wild horses and burros, if encountered during construction of sites, would not be harassed. Any encounters would be reported to the appropriate Wild Horse and Burro Specialist.

Cultural Surveys. Each potential site has been surveyed for cultural resources. Prior to surface disturbance, each site would be resurveyed if needed for the presence of artifacts or other cultural resources.

Visual Screening. Placement of structures on fixed EW sites and TIS sites would alter the visual character of the areas in which they were sited. Standard operating procedures that lessen these effects include painting structures to match the landscape, shielding structures with natural topography, placing netting over towers to blur their outline, and installing light filters on operational warning lights to decrease the reach of light transmission.

Roads. To the extent authorized by law, the Navy would assist with the maintenance of roads it uses to prevent deterioration from increased use by heavy trucks beyond the normal wear and tear from existing uses.

Hazardous Material Use. Small amounts of hazardous materials would be used at fixed and mobile EW sites and would be stored at fixed EW sites. These materials include fuel and cleaning supplies. NAS Fallon would comply with all federal, state, and local government rules, regulations, and guidelines governing the use, storage, transport, and disposal of these materials. NAS Fallon would follow the measures outlined in their Spill Prevention Control and Countermeasure Plan and other related plans and policies. Standard procedures include emergency secondary containment and use of Department of Transportation-certified contractors.

Laser Spotting. Laser spotting would be authorized only when there were no vehicles, people, or animals visible in the vicinity of the observation tower and target locations. The absence of vehicles, people, or animals would be determined by a trained on-site safety officer stationed on the observation tower. If vehicles, people, or animals were observed, the safety officer would call a ceasefire until the area was clear. Lasers would not be used under conditions that could reflect the beams, such as in the presence of standing water or snow.

Noxious Weed Control and Reclamation. Reclamation returns an area to a condition suitable for predevelopment uses. Disturbed areas would be topsoiled and seeded with a BLM-approved seed mixture to avoid the spread of noxious weeds. Noxious weed control would be conducted in accordance with the BLM Integrated Weed Management Strategy (BLM 1997) and Navy policy (OPNAVINST 5090.1B).

Airspace Management. The Federal Aviation Administration (FAA) regulates airspace for civilian, commercial, and military aircraft. NAS Fallon would continue to coordinate aircraft activities with the FAA. Due to safety concerns, the FAA would not release the use of airspace for military training if it is required by commercial air traffic.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

Many alternatives for the various elements of the proposed action were suggested during prescoping and scoping for the EIS. Four of these alternatives were eliminated from detailed consideration because they did not fulfill one or more of the evaluation criteria identified in Section 2.1. These alternatives and the reasons they were eliminated are discussed below.

Collocate EW Sites with other Existing Communications Equipment. Prescoping suggested that the Navy collocate EW equipment at sites already developed for other purposes. This alternative was not technically feasible because existing TIS sites are located on mountain tops without access and existing Range Air Surveillance System (RASS) sites are not suitably located to meet training requirements. EW sites must be accessible by roads or trails; are needed in shielded terrain, such as between mountain ranges; and are needed at greater distances from the training ranges so that aircrews are forced to fly through simulated defended terrain for longer periods. For these reasons, the alternative was eliminated from detailed review.

Evaluate other TIS Site Locations. Prescoping suggested that the Navy identify locations for placing TIS sites other than those described in the FRTC Requirements Document. Consultation with Native American tribes and technical limitations have yielded only the sites identified in the FRTC Requirements Document as acceptable. For this reason, this alternative was eliminated from detailed review.

Close B-16 and Move All Operations to B-20. Scoping suggested that the Navy close the B-16 training range and move all B-16 operations to B-20. This alternative was evaluated and rejected during the EIS for the Renewal of Withdrawn Lands at the B-20 Training Range (US Navy 1999a). As described in that document, closing B-16 and transferring operations to B-20 is not a reasonable option because it would adversely affect the training mission of NAS Fallon. B-20 is used to such an extent that increasing operations there to the level necessary to accommodate B-16 training would not be possible. Operations that could be transferred from B-16 to B-20, such as military training routes, have already been transferred. The remaining training performed at B-16 is not compatible with current B-20 training requirements. B-20 is within the airspace used for advanced training operations, such as major air wing and joint service training events. B-16 is under separate airspace and allows training to occur independently and concurrently at B-16 while advanced training is occurring at B-20 and the rest of the FRTC. B-16 is used daily under current operating conditions by fleet replacement squadrons and other DOD services for basic and intermediate air-to-ground training. Realigning training from B-16 to B-20 would greatly limit the availability for this training. For these reasons, this alternative was eliminated from detailed review.

Perform Training at Nellis Air Force Range. Scoping suggested that additional training be performed at Nellis Air Force Range (NAFR). The use of NAFR to accommodate proposed training activities is not technically feasible, because NAFR does not have the available training range and airspace capacity and availability to support the types of training proposed (IDA 1999). Nellis ranges are operating at near 100 percent capacity and with NAFR near 100 percent saturated, there is no unused capacity to absorb NAS Fallon aircraft training operations onto NAFR (US Navy 1999a). In addition, NAFR is a testing and evaluation (T&E) facility that focuses on research and development operations, while the ranges at NAS Fallon are

operations and maintenance (O&M) ranges that focus on combat training. While some of NAS Fallon's training may be conducted on T&E ranges, it is not a priority within the T&E mission, and the availability of combat training systems, targets, and resources is severely limited for O&M training. Therefore, combat training time for NAS Fallon at Nellis Air Force Range would not be available and could not be guaranteed, preventing NAS Fallon from fulfilling its training requirements. For these reasons, this alternative was eliminated from detailed review.

2.5 Preferred Alternative

After reviewing input received on the Draft EIS from federal, state, and local governmental agencies and the public, Alternative II has been selected as the Preferred Alternative in this Final EIS. Alternative II includes developing fixed and mobile EW sites on public lands in Gabbs Valley and Edwards Creek Valley and developing only mobile EW sites in Smith Creek Valley and Big Smoky Valley. This alternative recognizes concerns voiced during the public review period on the greater sensitivity of these latter two valleys. Alternative III, which would have fewer effects on public lands by developing only mobile EW sites on these lands, was found to be not technically or economically feasible at this time, as confirmed by the IDA report commissioned by the BLM (Appendix B). However, an all mobile alternative may be technically feasible and preferred by the Navy in the future to represent the threat environment at that time. The Navy would continue to strive to achieve an Alternative III-like scenario as funding is made available from Congress and as technology improves in the future.

2.6 Summary of Environmental Impacts for the Proposed Action and Alternatives

This section provides an overview of the Chapter 4 environmental impact analysis and mitigation measures. Table 2-6 summarizes the impacts along with proposed mitigation measures. Chapter 4 provides details of the rationale and reasoning for the impacts and mitigation measures.

Table 2-6
Overview of Environmental Consequences and Mitigation Measures

Resource	Proposed Action	Alternative I	Alternative II	Alternative III	No Action Alternative
Land Use	Public land area affected: 76 acres at four fixed EW sites (including roads and powerlines), one expanded EW site, and four TIS sites. Of this land, 26 acres would be closed to public access. Development would not interfere with continued multiple use management in affected areas.	Public land area affected: 68 acres at four fixed EW sites (including roads and powerlines), one expanded EW site, 18 mobile EW sites, and four TIS sites. Of this land, over 12 acres would be closed to public access.	Public land area affected: 34 acres at two fixed EW sites (including roads and powerlines), one expanded EW site, two communication hubs, 20 mobile EW sites, and four TIS sites. Of this land, under 12 acres would be closed to public access.	Public land area affected: 12 acres at one fixed comm hub, three combination comm hub/mobile EW sites, 19 mobile EW sites, one expanded EW site, and four TIS sites. Of this land, four acres would be closed to public access.	No new lands affected and no new land use impacts.
	Development on Navy-administered lands would be consistent with current and planned military use of these lands.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No change in land use on Navy lands and no new impacts.
Airspace Use	No changes in flight patterns.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No changes to airspace and no new impacts.
	Increase in Navy's ability to track aircraft in areas that currently have poor coverage and to provide better pilot accountability.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	Benefits from increased tracking capabilities would not be realized.
	No significant impact on commercial aviation since the Navy would have to request use of these areas from the FAA; use of these areas would not be granted if commercial air traffic is scheduled. No impact on civil aircraft flight from proposed airspace changes.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No changes to airspace use and no new impacts.
Biological Resources	No effects to threatened and endangered species, to sensitive species, including sage grouse, or to migratory birds. Sites would be resurveyed and no development would occur during mating or nesting periods. Ranges and cable routes would be surveyed for wetlands prior to development, and the Navy would obtain any permits for its activities that are required by the Clean Water Act and the Rivers and Harbor Act.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No impacts to sensitive species or habitats.

Table 2-6
Overview of Environmental Consequences and Mitigation Measures

Resource	Proposed Action	Alternative I	Alternative II	Alternative III	No Action Alternative
Biological Resources (cont'd)	Construction and operation of EW sites would result in adverse but not significant impacts to nonsensitive wildlife and vegetation. Disturbing vegetation may increase the spread of noxious weeds but would be controlled in accordance with the BLM Integrated Weed Management Strategy.	Similar to Proposed Action but less acreage disturbed.	Same as Alternative I but less acreage disturbed.	Same as Alternative II but less acreage disturbed.	No site development and no new impacts to biological resources.
Geology, Soils, and Mineral Resources	No significant wind or water erosion impacts from site development because of small areas involved and standard operating procedures for reclamation.	Slightly lower level of impact compared to proposed action from reduced size of area disturbance.	Lower level of impact compared to proposed action and Alternative I from reduced size of area disturbance.	Lower level of impact compared to proposed action and Alternatives I and II from reduced size of area disturbance.	No new impacts to geology and soils.
	No effects on mineral resources.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new impacts on mineral resources.
Water Resources	No significant impacts to water resources; training activities in the Dixie Valley would avoid streams, ponds, and wetlands. Training at B-19 would not disturb the fenced pond located near its western border.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new developments and no new water resources impacts.
	No impacts to water resources from special use airspace changes since changes would not involve ground disturbances.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No airspace changes and no water resources impacts.
Cultural Resources	Five archaeological sites, a ranch complex, two historic travel corridors, the Navy's Range Control building, and 18 canal features associated with the Newlands Project could potentially be impacted. Assessments of physical and visual impacts were conducted. Through determinations of eligibility and concurrence with the SHPO, and project design, only two archaeological sites would be impacted. Mitigation plans, if required, would be developed in consultation with the SHPO.	Same as Proposed Action.	Impacts would be the same as the Proposed Action except that the two unevaluated sites are excluded from this alternative. Therefore, no mitigation plans would be necessary.	Same as Alternative II.	No new developments and no new cultural resources impacts.

Table 2-6
Overview of Environmental Consequences and Mitigation Measures

Resource	Proposed Action	Alternative I	Alternative II	Alternative III	No Action Alternative
Native American Religious Concerns	Final proposed locations for the TIS sites has been made in consultation with the tribes. Native American consultation is complete, and based on this consultation, no further concerns have been brought forward.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new developments or training and no impacts.
Visual Resources	No significant impacts. Developments are consistent with BLM Visual Resource Management objectives for Class III and Class IV lands.	Similar to Proposed Action but less impact from reduced size of fixed EW sites. Mobile EW sites would not have a significant impact.	Similar to Alternative I but less impact from fewer fixed EW sites.	Similar to Alternative II but less impact from no fixed EW sites on public land (except small communication hub).	No new developments and no new visual resources impacts.
Environmental Justice and Socioeconomics	Proposed action would slightly increase NAS Fallon procurement, thereby introducing more money to the regional economy. Proposed action would not affect commercial airline tax received by counties under airspace used by NAS Fallon.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new developments and no new impacts to the regional economy.
	Location of up to 10 personnel and their families to Lander County would increase the circulation of money in the local economy.	Similar to Proposed Action; leased or purchased yard would have added benefit.	Less than Alternative I from relocation of up to five personnel and their families to Lander County.	Same as Alternative II.	No relocation to Lander County and no impact to local economy.
	The proposed action would not disproportionately affect the health or economic opportunities of minority or low-income populations.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No environmental justice impacts.
Recreation	No significant impacts to Spencer Hot Springs, the Hickison Petroglyphs Recreation Area, or the Pony Express National Historic Trail. For major organized events, use of EW sites nearest the trail may be avoided if coordinated in advance with NAS Fallon and if no conflicts in training would result.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new developments and no new impacts to recreation.

Table 2-6
Overview of Environmental Consequences and Mitigation Measures

Resource	Proposed Action	Alternative I	Alternative II	Alternative III	No Action Alternative
Grazing and Wild Horse and Burro Management	No effects on grazing or wild horse and burro management.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new development and no new impacts to grazing and wild horse and burro management.
Air Quality	No net increase in emissions in Reno MOA (Washoe County nonattainment area); no conformity determination required.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No changes to use of Reno MOA and no impacts to air quality.
	In attainment areas, minor temporary adverse effects from site construction would occur.	Similar to Proposed Action; less acreage disturbed but more sites operated.	Similar to Alternative I but less acreage affected.	Similar to Alternative II but less acreage affected.	No new site development or use and no new air quality impacts.
Noise	Minor temporary noise impacts during site construction.	Similar to Proposed Action; slightly greater construction noise from more sites.	Same as Alternative I but less acreage affected.	Same as Alternative I but less acreage affected.	No site construction and no noise impacts.
	Low level of increased noise from new site operation and training operations. No increase in number of flight operations and no introduction of noise in new areas.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No change in training operations and no new noise impacts.
Public Safety and Hazardous Materials	No impact from EW site development or laser spotting; standard operating procedures protect personnel and public from hazards.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No EW site development and no impact to public safety.
	Development of TIS sites would have a beneficial impact by enabling NAS Fallon to improve their ability to track aircraft in areas that now have incomplete coverage.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	Benefits from increased tracking capabilities would not be realized.
	No significant impacts from high altitude weapons delivery training or Hellfire missile training; ordnance would be contained within existing footprint boundaries.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new training and no impact to public safety.
	No hazardous materials impacts; standard operating procedures would be implemented to manage hazardous materials.	Same as Proposed Action.	Same as Proposed Action.	Same as Proposed Action.	No new site development and no new impacts.

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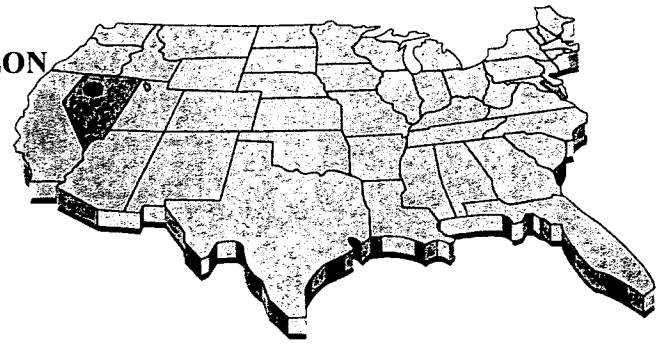


3.0 AFFECTED ENVIRONMENT

CHAPTER 3
AFFECTED ENVIRONMENT

This chapter provides a description of the existing environmental and socioeconomic conditions in the region of NAS Fallon and the FRTC. The region of influence, unless otherwise stated, is the area under the FRTC airspace (Figure 1-2). This information is used in Chapter 4 as the baseline for identifying and evaluating environmental impacts resulting from the proposed action and each of the alternatives.

Chapter 3 focuses on those resources potentially affected by the proposed action and alternatives and on topics that have received public concern. Those resources include land use, airspace use, biological resources, geology, soils, and mineral resources, water resources, cultural resources, Native American religious concerns, visual resources, environmental justice and socioeconomics, recreation, grazing and wild horse and burro management, air quality, noise, and public safety and hazardous materials. Transportation is not detailed in this EIS since the proposed action would not generate an appreciable number of vehicle trips or otherwise affect regional or local roadways.

3.1 LAND USE

This section discusses the current land ownership and use within the region of influence (ROI) of the proposed action. Although the ROI is generally considered to be the land area beneath the FRTC airspace, specific land use changes are proposed in only a few areas. Other lands where specific changes are not proposed may still be incompatible with other elements of the proposed action, such as the potential incompatibility between sensitive land uses and changes in noise conditions from the proposed action. The overall land area beneath the FRTC is therefore discussed in general with an emphasis on identifying potentially sensitive land uses, such as residences or institutional facilities (e.g., schools, hospitals, and churches), while areas where specific land use changes are proposed are considered in greater detail. (Existing noise conditions are discussed in Section 3.13.)

3.1.1 Regional Land Status and Use

The FRTC is in the west-central part of Nevada and includes land or airspace in Churchill, Lander, Eureka, Pershing, Washoe, Lyon, Nye, and Mineral counties. The FRTC airspace covers approximately 13,000 square miles. Land beneath the FRTC airspace is under a variety of ownerships, including federal, state, and local agencies, Native American groups, and private entities. Categories of land use within the boundaries of the FRTC are shown on Figure 1-2. The overwhelming majority of the area is public land administered by Bureau of Land Management (BLM).

There are few population centers within the ROI. The city of Fallon, located five miles west of NAS Fallon, is the largest community in the project area. Other population centers include Austin and Kingston/Gilman Springs in Lander County, Eureka in Eureka County, Gabbs in Mineral County, Lovelock in Pershing County, Yomba Tribe and Reservation, Gerlach and Empire in Washoe County, and Middlegate and Cold Springs in Churchill County.

Most proposed land use changes would occur on either Navy- or BLM-administered land; the proposed fiber optic cable route may cross other jurisdictions. Navy lands are managed specifically for military training and support activities. BLM lands, however, are administered for multiple use, including wilderness, recreation, livestock grazing/wild horse management, and mining, which may be incompatible with certain military uses.

BLM

Most lands within the ROI are administered by the Carson City and Battle Mountain Field Offices of the BLM. Fixed and mobile electronic warfare (EW) radar sites and tracking instrumentation subsystem (TIS) sites are proposed on BLM lands (Figures 2-1, 2-9, 2-14, and 2-15). Detailed descriptions of site-specific land uses at these sites are provided in Section 3.1.2. The location, latitude and longitude, and legal descriptions for these sites are provided in Appendix C. Permission to locate these facilities on public land would be administered through rights-of-way (ROW) granted by the BLM. In some cases, additional rights-of-way would need to be obtained for roadways and powerlines to fixed EW sites.

There are several BLM wilderness study areas (WSA) beneath the FRTC, including the Clan Alpine, Desatoya Mountains, Job Peak, Stillwater Range, Augusta Mountains, and a portion of the Gabbs Valley WSAs managed by the Carson City BLM Field Office, the Antelope, Simpson Park, and Roberts WSAs managed by the Battle Mountain BLM Field Office, and a portion of the Park Range WSA managed by the Ely BLM Field Office. Portions of the Clan Alpine, Desatoya Mountains, and Park Range WSAs have been recommended as suitable for wilderness designation. All WSAs are managed to preserve the wilderness characteristics, regardless of suitable or non-suitable recommendations by BLM field offices. Management objectives for wilderness emphasize managing areas recommended for wilderness designation as wilderness in the long run.

BLM is also directed by the 1983 State Legislature, through Senate Bill 40, to give consideration to appropriate state, local, and tribal lands in the development of land use plans for federally administered lands. BLM land use plans are reviewed for consistency with local policy plans for public lands and BLM land use plans are made compatible to the extent that the Secretary of the Interior finds consistent with federal law and the purpose of FLPMA.

US Navy

Navy-administered land in the ROI includes NAS Fallon, the B-16, B-17, B-19, and B-20 training ranges, and land in the Dixie Valley. A discussion of Navy-administered lands is provided in Section 1.4.2. Further land withdrawals were recently enacted around B-16, B-17, B-19, the Department of Energy's shoal site, and in Dixie Valley (US Navy 1998c).

Other Land Status and Use

US Fish and Wildlife Service (USFWS). The Stillwater National Wildlife Refuge, Fallon National Wildlife Refuge, and Stillwater Wildlife Management Area, managed by the USFWS, are approximately seven miles to the south and southeast of B-20. In addition, Anaho Island NWR is located approximately 13 nautical miles south of the southern end of the Reno MOA. No land use changes are proposed within these areas. Biological resources found in these areas are discussed in Section 3.3. The USFWS is proposing to extend the boundaries of the Stillwater National Wildlife Refuge north toward the southern boundary of B-20.

US Forest Service (USFS). The USFS manages the Toiyabe National Forest in Lander and Eureka counties for multiple uses, including recreation, grazing, and mineral extraction. Dispersed recreation is the predominant sensitive use in this area and includes the Pony Express Trail, which passes through the Toiyabe National Forest. The Arc Dome, Alta Toquima, and a portion of the Table Mountain wilderness areas in the Toiyabe National Forest are beneath the FRTC.

Bureau of Reclamation (BOR). BOR has withdrawn land north of B-16 as part of the Newlands Project, which provides water for domestic, irrigation, and other uses. No sensitive land uses are associated with the Newlands Project.

Indian Tribes. There are several tribal landholdings within the ROI. The Walker River Indian Reservation is approximately 15 miles southwest of NAS Fallon, adjacent to the southern boundary of the B-19 range. The Fallon Indian Reservation is approximately four miles northeast of NAS Fallon in the Lahontan Valley, the Yomba Indian Reservation is approximately 75 miles east of NAS Fallon in the Reese River Valley, and the Pyramid Lake Indian Reservation is approximately 30 miles northwest of NAS Fallon.

Private Lands. Private landholdings are interspersed throughout the FRTC but are a relatively small percentage of the total area. Private lands in the ROI tend to be in the valleys and along major highways. Larger private landholdings are in a checkerboard pattern with BLM lands in the northwest corner of the FRTC around B-20. Most of these lands are used for grazing or low-intensity agriculture.

3.1.2 Site-specific Land Use

The Navy would obtain easements or rights-of-way from USFWS, BOR, Nevada Department of Transportation, BLM, Churchill County, and private individuals for development that would occur on non-Navy lands. Rights-of-way may be necessary for site development, access roads, and powerlines.

EW Sites

Detailed location maps for all EW sites are provided in Appendix C. None of the proposed sites are within WSAs.

Edwards Creek Valley. All sites in Edwards Creek Valley are in Churchill County on land administered by the Carson City BLM Field Office. The proposed fixed EW site (EW-71) is at the southwestern end of the valley, approximately 0.75 miles north of Highway 50, at the south end of an abandoned airstrip. An existing powerline is approximately 1,200 feet southeast of the site. Four of the mobile site locations—A, B, C, and D—would be on the southeast side of Alpine Road, which runs parallel to the northwest side of the valley. Mobile site E would be approximately half a mile south of Highway 50 (Figures C-1 and C-2).

Gabbs Valley. The proposed fixed site (EW-72) and mobile sites A, B, and D would be in Mineral County, while mobile sites C and E would be in Nye County. The Carson City BLM Field Office administers land at all sites. EW-72 would be approximately 2.5 miles southeast of Scheelite Mine Road on a gravel road that runs northwest-southeast between Scheelite Mine Road and State Route 361. An existing powerline is approximately 6,300 feet west of the site. The proposed mobile sites A and B would be along Scheelite Mine Road. Mobile site D would be just west of the Black Hills on a minor road and adjacent to an existing pipeline. Mobile sites C and E would be in the eastern end of Gabbs Valley. Site C would be on a minor road approximately five miles west of State Route 361, while site E would be on the southeast side of State Route 361, approximately two miles south of Gabbs (Figures C-3 and C-4).

Smith Creek Valley. All proposed EW sites in Smith Creek Valley would be within Lander County on land administered by the Battle Mountain BLM Field Office. EW-73 would be approximately two miles northwest of the State Route 722 off an existing unpaved road. An existing powerline is approximately 16,600 feet northeast of the site. Two mobile sites

are on the same unpaved road as EW-73, one mobile EW site is off State Route 722, one is a half mile southwest of Highway 50 on a maintained gravel road to a gravel pit, and one is about four miles southwest of Highway 50 on a separate maintained gravel road. An existing powerline is adjacent to the proposed communications hub site (Figures C-5 and C-6).

Big Smoky Valley. All proposed sites would be within Lander County on land administered by the Battle Mountain BLM Field Office. EW-74 would be on a minor road approximately 1.5 miles north of Highway 50. Mobile site A and the fixed communications hub proposed under alternatives II and III also would be at this location. An existing powerline is approximately 19,000 feet northwest of the site. One mobile site is off State Route 376, one is just north of Highway 50 about one mile east of the intersection with State Route 376, one is off a maintained gravel road leading to Spencer Hot Springs, and one is a mile south of Highway 50 on a maintained road leading to Conquest Mine (Figures C-7 and C-8).

EW-75, EW-76, EW-77. These sites would be entirely on Navy-administered land currently used for military operations, as described in Section 1.4.2 (Figures C-10, C-12, and C-13).

EW-10. EW-10 is in Churchill County on land administered by the Carson City BLM Field Office. The site is west of Chalk Mountain, near the intersection of Highway 50 and Highway 121. EW-10 is an existing EW site that would be expanded under the proposed action or alternatives (Figure C-14).

TIS Sites

Three proposed TIS sites are in Lander County and one is in Pershing County on land administered by the Battle Mountain BLM Field Office. None of the sites would require rights-of-way for roads or utility lines. The legal location description for each of these sites is provided in Appendix C.

TIS-37. TIS-37 would be approximately six miles south of Highway 50 in the Desatoya Mountains (Figure C-17).

TIS-45. TIS-45 would be in the Shoshone Mountains, approximately 3.5 miles north of State Route 722 (Figure C-18).

TIS-47. TIS-47 would be in the Toquima Range approximately three miles south of Highway 50 (Figure C-19).

TIS-49. TIS-49 would be in the Fish Creek Mountains on one of two existing non-Navy communication sites (Figure C-20).

Training Ranges and Dixie Valley Area

All proposed actions would occur in Navy-administered land currently used for military operations, as described in Section 1.4.2.

Fiber Optic Cable Route

Fiber optic cable routes from NAS Fallon to the B-16 and B-19 training ranges would travel over 31 miles and largely follow existing rights-of-way. The cable route would follow Pasture Road and then south along Highway 95. The route would turn west to B-16 off Highway 95 along an existing unimproved road; farther south the route would turn east off Highway 95 to B-19 across a quarter mile of public land withdrawn under the Range Safety and Training Public Land Withdrawal EIS (US Navy 1998c).

3.2 Airspace Use

The primary ROI for airspace issues includes FRTC airspace for which changes are proposed, including R-4802, R-4813, R-4804, and the Reno Military Operations Area (MOA), and federal airways, jet routes, airports, and commonly used visual flyways in the vicinity of the FRTC airspace. The secondary ROI includes all other FRTC airspace. FRTC airspace is described and defined in Section 1.4.2, Training Assets and Capabilities, and is depicted on

Figure 1-3. Current flight patterns are shown on Figure 3-1.

3.2.1 Description of Project-specific FRTC Airspace

Airspace to which changes are evaluated in Chapter 4 is described in detail below. The airspace discussed is depicted on Figure 1-3.

Restricted Areas

R-4802 and R-4813. R-4802 and R-4813 were established to contain flight operations associated with bombing, strafing, and laser-targeting activities conducted on B-20. B-20 provides a target area for high explosive live ordnance up to 2,000 pounds and for practice ordnance. R-4802 is a rectangular area with a three-statute mile radius from the ground surface to 8,000 feet MSL, or approximately 4,000 feet above ground level, that directly overlies B-20. R-4813 is a larger expanse of restricted area airspace beginning at the surface and extending up to but not including 18,000 feet MSL (FL180), surrounding R-4802 and overlying the outer portions of B-20. Flight activities are limited to altitudes above 3,000 feet above ground level, where tactically feasible, in a small area in the southwestern portion of R-4813 overlying the Stillwater Wildlife Management Area.

R-4804. R-4804 was established to contain flight operations associated with strafing, laser ranging and targeting, and bombing activities on B-17. This circular restricted area extends from the ground surface up to but not including 18,000 feet MSL (FL180), excluding a portion between 2,000 feet above ground level and 8,500 feet MSL that lies north of and one nautical mile from US Highway 50, between the intersection of this highway with longitude 118 degrees, 25 minutes, 33 seconds west and 118 degrees, 7 minutes, 33 seconds west. This exclusion provides a corridor through which visual flight rule (VFR) aircraft may transit the region while remaining clear of military operations in B-17 airspace.

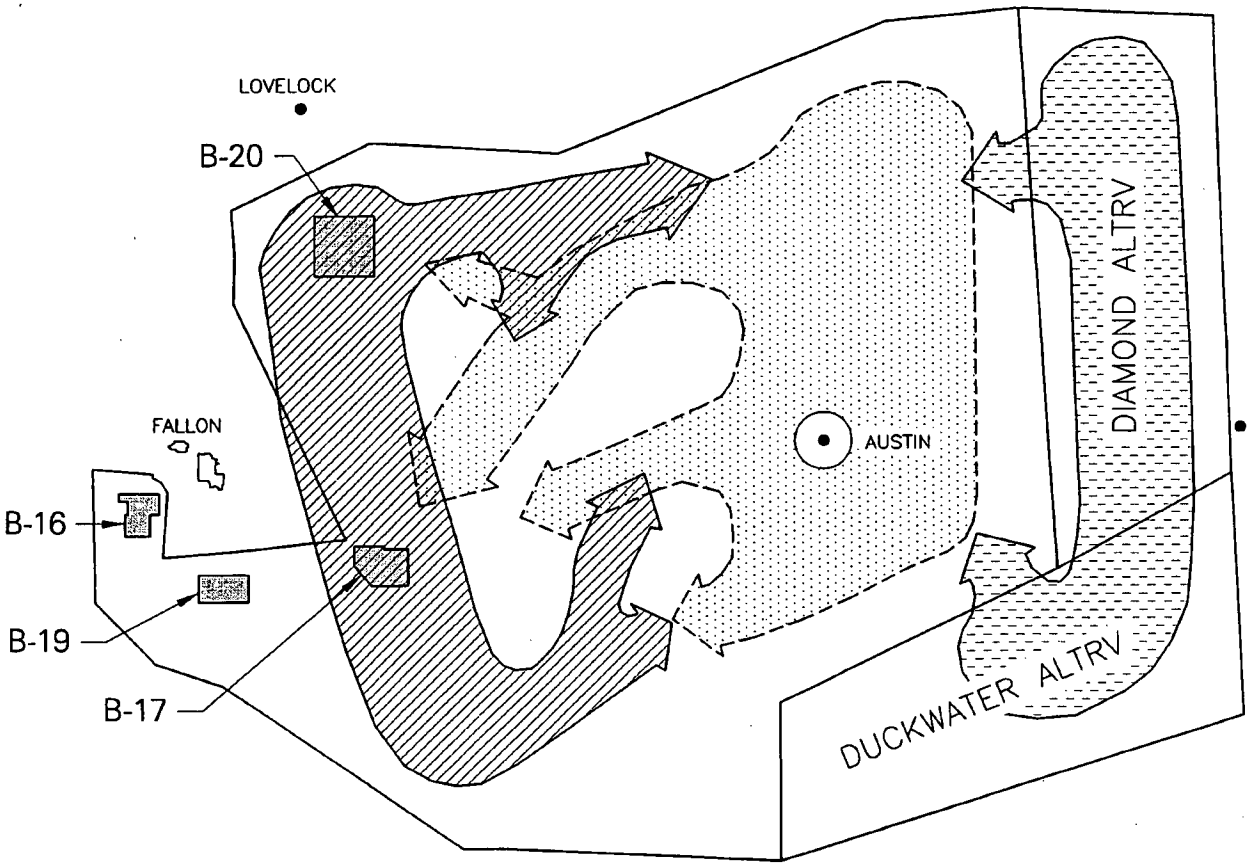
The Federal Aviation Administration's (FAA's) Oakland and Salt Lake City Air Route Traffic Control Centers (ARTCCs) are the controlling air traffic control agencies for the FRTC special use airspace. The published times of use for the restricted areas are shown in Table 3-1. With the number of training programs hosted by the FRTC, this airspace is heavily used Monday through Friday, with more limited use on Saturdays and Sundays. For calendar year 1998, the total number of air operations conducted in R-4802, R-4813, and R-4804 was 9,371, 10,755, and 10,546, respectively. These operations are consistent with totals over the past few years for these restricted areas. The types of aircraft using this airspace include Navy, Air Force, and Marine aircraft and helicopters.

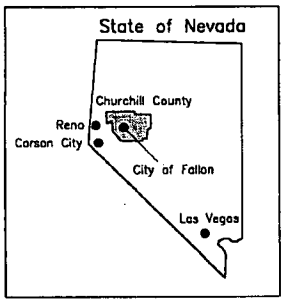
Military Operations Areas

The FRTC uses MOAs for air-to-air intercepts, air combat maneuvering, and other nonhazardous flight training. These MOAs are used in conjunction with the restricted areas during training activities and exercise operations requiring use of multiple areas. The Reno MOA extends from 13,000 feet MSL (FL130) up to but not including 18,000 feet MSL (FL180). Higher altitudes above and within the lateral boundaries of this MOA up to 31,000 feet MSL (FL310) are assigned by Oakland ARTCC, the controlling agency for this MOA. The published use times are included in Table 3-1. The Reno MOA was used by the Nevada Air National Guard, which conducted approximately 700 annual sorties in this airspace. In September 1997, NSAWC became the using and scheduling agency for this MOA and conducted 59 sorties in this airspace during 1998.

3.2.2 Other Airspace

Federal airways and jet routes make up a national network of "highways" that interconnect the airport systems. Federal airways are established below 18,000 feet MSL and are normally used by unpressurized propeller aircraft not equipped for longer-distance high-altitude flight. Jet routes begin at 18,000 feet





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Not to Scale

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After air-to-air engagement with enemy aircraft, the training aircraft attack targets at B-17 and B-20. There is 5 nautical mile avoidance area for aircraft around the town of Austin.

Legend

- Staging Area for Training Aircraft (95% at 20,000 ft. MSL or higher)
- Staging Area for Enemy Aircraft (95% at 11,000 ft. MSL or higher)
- Air-to-Air/Electronic Warfare Training Area (95% at 11,000 ft. MSL or higher)

Current Flight Patterns

NAS Fallon, Nevada

Source: NAS Fallon

Figure 3-1

Table 3-1
Existing Altitudes and Published Times of Use

Airspace Area	Effective Altitude	Time Used	
		Days of Week	Hours of Day
R-4802	Surface to 8,000 feet MSL	Monday to Friday	7:15 AM to 11:30 PM
R-4813	Surface to but not including 18,000 feet MSL	Daily	7:15 AM to 11:30 PM
R-4804	Surface to but not including 18,000 feet MSL	Daily	7:15 AM to 11:30 PM
Reno MOA	13,000 feet to but not including 18,000 feet MSL with an overlying ATCAA up to 31,000 feet MSL	Tuesday to Saturday	10:00 AM to 6:00 PM Other times by NOTAM

MSL and are used by the vast majority of instrument flight rules (IFR) air traffic. When authorized by air traffic control, some IFR aircraft may operate off the established jet route structure on an assigned course to avoid hazardous weather or heavy air traffic conditions or to transit a more direct route between the departure and arrival airports.

None of the federal airways or jet routes traversing the region intercept any portion of R-4802, R-4813, R-4804, or the Reno MOA. However, Oakland and Salt Lake City ARTCCs may route air traffic over this airspace when it is not in use to provide a more direct routing between airports or as necessary to avoid heavy air traffic or weather conditions. It is during these conditions that Oakland and Salt Lake City ARTCCs will limit the altitudes of ATCAA airspace overlying the FRTC to ensure the required separation between IFR traffic and military aircraft operating within special use airspace.

Fallon has a municipal airport that serves the Churchill County and Lovelock area. The airport supports about 30,000 general aviation operations per year and is the base for approximately 60 aircraft (Churchill County 1995b). Most direct routing between this airport and other airfields avoids special use airspace. However, as indicated above, a VFR corridor along US Highway 50 through the northern portion of R-4804 provides for VFR general aviation aircraft flying between Fallon and points east of the FRTC. NAS Fallon air traffic control provides radar services to general aviation aircraft for radar flight following services or routing through special use airspace, if requested and if that airspace is not active. Small local airports near Fallon include Toulon/Derby, Gabbs, Oxbow, Silver Springs, and Austin. Larger regional airports include Battle Mountain, Elko, Winnemucca, Yerington, Carson City, and Reno/Tahoe International.

3.3 BIOLOGICAL RESOURCES

Biological resources discussed in this section include vegetation, wildlife, sensitive species, and sensitive habitats on the project sites and surrounding area. The ROI for biological resources encompasses the entire area covered by the FRTC. A brief discussion of threatened and endangered species that possibly could occur at project sites is provided, followed by descriptions of vegetation, wildlife, and wetlands. Site-specific information on proposed EW and TIS sites, fiber optic cable routes, B-17 and B-19 training ranges, and the Dixie Valley area is provided. Appendix E includes a coordination letter from USFWS regarding sensitive species, and Appendix F provides a list of common plant and animal species found within the ROI (Tables F-1 and F-2).

Background information on biological resources is based primarily on field surveys (Rathbun 1999, 1998, and 1996; Western Foundation of Vertebrate Zoology 1993), species-location records of the

Nevada Natural Heritage Program (NNHP) (NNHP 1999), and a list of sensitive species from the USFWS (USFWS 1999). These references were supplemented by the Ecological Inventory of NAS Fallon and Environs (US Navy 1997d), regional management plans (USFWS 1995; US Navy 1991a; BLM 1986b, 1985b), and other environmental documents prepared for NAS Fallon (US Navy 1999a, 1998c, 1985a).

Biological field surveys have been conducted by a Navy biologist at the proposed TIS and EW sites and along the fiber optic cable routes. The primary purpose of the field surveys was to determine if protected species of plants and animals exist at the proposed project locations. General vegetation communities based on landforms and elevations are used to describe the sites because the surveys did not include detailed information of species composition or site conditions. Wildlife were surveyed based on direct observation and indirect indicators, such as tracks, nests, burrows, and scat. Preliminary data results from these surveys are discussed below (Rathbun 1998, 1999).

3.3.1 Threatened and Endangered Species

No endangered or threatened species are known to occur at any of the proposed project sites. A list of threatened and endangered species that could occur in the ROI is presented in Table 3-2. A list of federal species of concern is provided in Appendix F (Table F-3).

During surveys of the sites, no evidence was found that any threatened or endangered species inhabit, forage, or otherwise use any of the project sites (Rathbun 1999, 1998; Western Foundation of Vertebrate Zoology 1993). In May 1999, the fiber optic cable routes were surveyed. Preliminary results suggest that no sensitive species are within the

Table 3-2
Federally Listed, Proposed, and Candidate Species Potentially Inhabiting the ROI

Common Name	Scientific Name	Federal/State/ NNNPS Status[1]	Preferred Habitat[2]	Likelihood of Occurrence at Project Sites[3]
Amphibians				
Spotted frog	*Rana luteiventris*	C/--	W/R/S	U
Fish				
Cui-ui	*Chasmistes cujus*	E/Y	L/S	U
Lahontan cutthroat trout	*Onchorynchus clarki henshawi*	T/Y	S/L	U
Birds				
Mountain plover	*Charadrius montanus*	PT/Y	U	Q
Bald eagle	*Haliaeetus leucocephalus*	T/Y	W/R/U/A	Q
Plants				
None				

Sources: NNHP 1999; USFWS 1995, 1999; US Navy 1997d

[1]Federal Status
E = endangered, T = threatened, PT = proposed threatened
SC = Species of Concern

Nevada State Status (NDOW)
CY = protected as a cactus or yucca under state law
Y = state protected

NNNPS Status
W = watch - potentially vulnerable

[2]Habitat
W = wetland/marsh
R = riparian
U = upland
A = agricultural
L = lake
S = stream

[3]Existence at Project Sites
C = confirmed present or breeding
O = confirmed occasional visitor
P = possible habitat or breeding
Q = possible occasional visitor
U = unlikely

proposed alignments to B-16 and B-19 (Rathbun 1999). Nursery and breeding habitat is not present at any of the project sites for listed species. Bald eagles and mountain plover may transit the sites. There are no waterways at any of the proposed project sites that could support the spotted frog, cui-ui, or Lahontan cutthroat trout. Although the NNHP noted that habitat for Lahontan cutthroat trout is located near proposed sites TIS-37 and TIS-47 (Department of Conservation and Natural Resources 1999), this habitat is not present at these proposed sites because they are on ridge tops.

One sand cholla, a federal species of concern, was documented within the proposed boundaries of EW-74 (Rathbun 1999; NNHP 1999). This species also has been recorded at three locations in the northwestern portion of training range B-16 and on the B-19 training range (US Navy 1997d). A grizzly bear prickly pear cactus was documented in 1993 at proposed site EW-73 (Western Foundation of Vertebrate Zoology 1993). This cactus is not a state or federally protected species, but the state of Nevada considers all cacti important and provides protection for cactus species on private land through the Nevada Cactus and Yucca Law.

Sage grouse is a federal species of concern that is an important game species and is of local interest. Sage grouse are found throughout the eastern portion of the project area, especially in the Shoshone Range (Figure 3-2). Essential habitats for sage grouse are breeding areas, including strutting grounds and nest sites (typically within two miles of a strutting ground), and upland meadows, which provide forage for young and adults during the summer and fall (BLM 1983). The sage grouse strutting areas closest to the proposed fixed EW and TIS sites are approximately four and five miles to the north of proposed site EW-74 and its associated powerline, respectively, in the Big Smoky Valley; five miles to the southwest of proposed site EW-71 in Edwards Creek Valley; and within one to two miles of Mobile D and Mobile E in Smith Creek Valley and Mobile A in Edwards Creek Valley. In addition, the Big Smoky Valley Mobile D site is approximately two miles from a strutting area, and Mobile A is approximately 5.5 miles from the closest strutting area. No sage grouse, sage grouse droppings, or other sign of sage grouse were observed during field surveys of the proposed EW and TIS sites in May 1999 (Rathbun 1999).

The NNHP search noted three other federal species of concern that have been observed at or near the proposed EW sites. Pygmy rabbit was recorded near proposed site EW-71 in Edwards Creek Valley. Townsend's big-eared bat and western small-footed or California myotis were reported near proposed site EW-72 in Gabbs Valley, although nursery habitat is not present at the proposed site. No other sensitive species were reported within or near the sites. Potential habitat for other special status species are noted in Table F-3 in Appendix F (NNHP 1999).

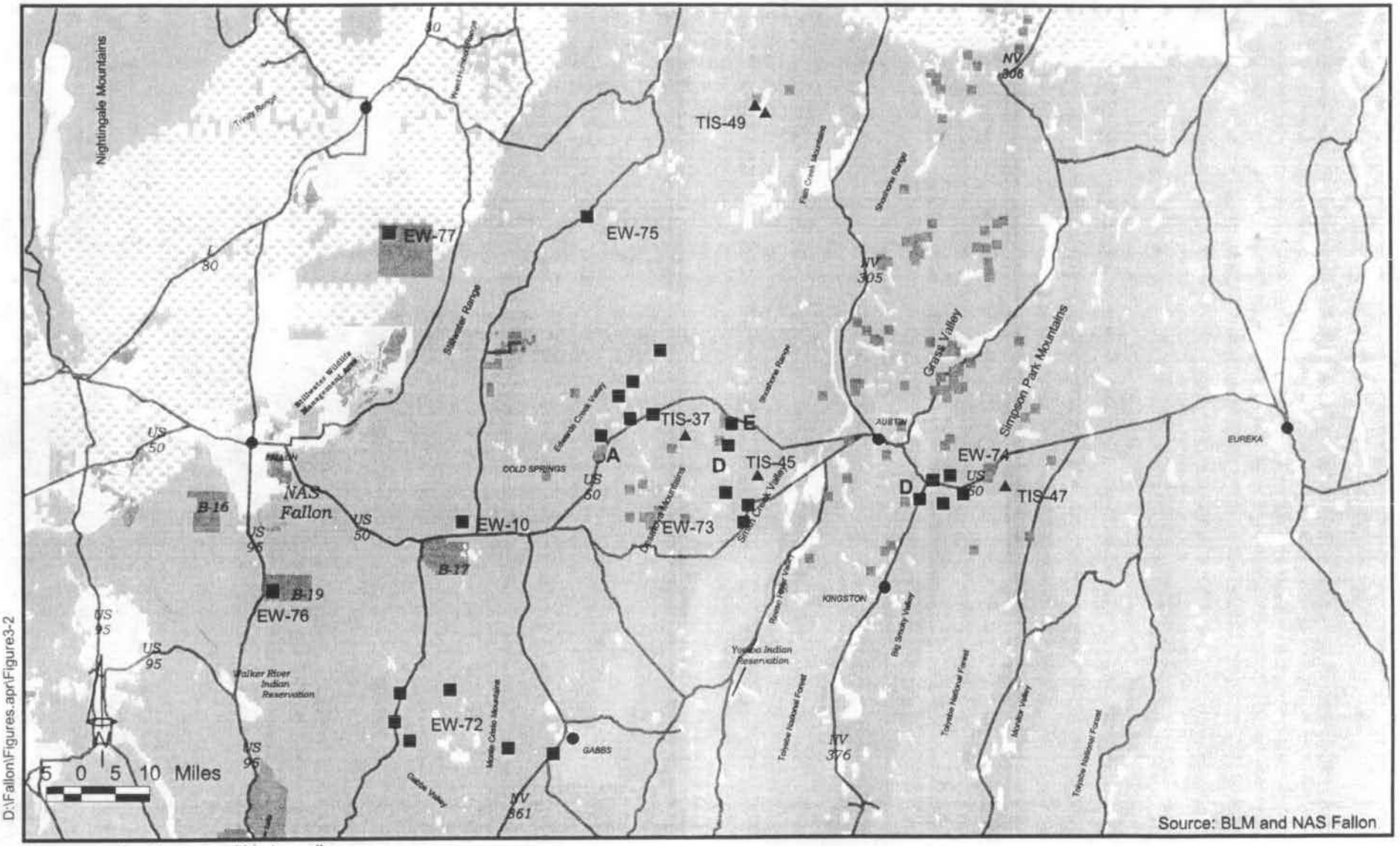
3.3.2 Vegetation

Regional Vegetation

The vegetation communities found in the ROI are typical of those found in the Great Basin region. The extremes of climate, elevation, and soil type combine to produce environments that strongly influence the plant species. Vegetation varies from salt-tolerant shrubs and grasses that inhabit the valley bottoms to pinyon-juniper and mountain mahogany in the higher mountain ranges. The vegetation at the project sites can be broken down in a general way by elevation (BLM 1983; BLM 1971).

Valley Bottoms (3,700 to 5,000 feet) Greasewood Type. In the valley bottoms, the vegetation ranges from pure stands of greasewood to mixtures of greasewood, shadscale, rabbitbrush, sagebrush, and winterfat. The understory, where present, consists of giant wild rye, alkaki sacaton, bottlebrush squirreltail, cheatgrass, pepperweed, halogeton, Russian thistle, and wild mustard.

Benches and Fans (3,700 to 5,300 feet) Shadscale Type. On benches and fans, the vegetation consists primarily of shadscale, sagebrush, rabbitbrush, and hopsage. The



D:\Fallon\Figures.apr\Figure3-2

Sage grouse locations are within two miles of mobile sites D and E in Smith Creek Valley, mobile A in Edwards Creek Valley, and Mobile D in Big Smoky Valley. Sage grouse is a federal species of concern.

Note: TIS-49 will be located at one of two non-Navy communication sites.

Legend

- Public Lands
- Military Lands
- Private Lands
- Indian Reservations
- US Forest Service Lands
- Wildlife Refuge
- Roads
- Proposed Fixed EW or Mobile EW Sites
- Proposed TIS Site
- Sage Grouse Strutting Area

Sage Grouse Strutting Areas

NAS Fallon, Nevada

Figure 3-2

Tetra Tech, Inc

understory is mainly squirreltail, Indian ricegrass, galleta grass, cheatgrass, wild mustard, halogeton, and primrose.

Foothills and Mountains (5,000 to 10,000 feet) Sagebrush Type. In these areas, the vegetation consists of sagebrush with scattered pinyon pine and juniper and with interspersed perennial grasses. The shrub cover consists of big sage, black sagebrush, rabbitbrush, service-berry, snowberry, and mountain mahogany. The understory consists of Sandberg bluegrass, bluebunch wheatgrass, giant wild rye, Idaho fescue, and cheatgrass.

Foothills and Mountains (6,000 to 8,000 feet) Pinyon-Juniper Type. On the mid-level foothills and mountains, the vegetation consist of pinyon pine and juniper interspersed with the sagebrush type in localized areas. It varies from nearly pure stands of pinyon-juniper to stands mixed with big sage and rabbitbrush. Sandberg bluegrass, needle and thread grass, and cheatgrass are the most common grasses found in the understory.

EW Sites

Most of the proposed EW sites can be classified as shadscale or sagebrush type vegetation, which are sparse salt-desert shrub communities. Salt-desert shrub is one of the principal plant communities of the Great Basin Desert, covering an estimated 40 million acres (Blaisdell and Holmgren 1984), and is typically found in areas of high salinity and/or high alkalinity.

Edwards Creek Valley

EW-71. This site is within a shadscale type community. Plant species observed during the survey are bud sagebrush, shadscale saltbush, bottlebrush squirreltail, tumblemustard, Indian ricegrass, cheatgrass, Sandberg's bluegrass, and halogeton (Rathbun 1999).

Mobile A (ED-4). The vegetation at Mobile A can be classified as a sagebrush type. Plant species observed during the survey include Wyoming big sagebrush, shadscale saltbush, bud sagebrush, spiny hopsage, littleleaf horsebrush, broom snakeweed, cheatgrass, bottlebrush squirreltail, Sandberg's bluegrass, and pussytoes.

Mobile B (ED-6). The site is within an area of shadscale type vegetation that appears to have burned in recent years. Plants observed include shadscale saltbush, bud sagebrush, Sandberg's bluegrass, cheatgrass, and filaree.

Mobile C (ED-8). The site is within an area of sagebrush type vegetation that appears to have burned recently. Plant species observed during the survey include Wyoming big sagebrush, shadscale saltbush, bud sagebrush, Russian thistle, tumblemustard, rubber rabbitbrush, bottlebrush squirreltail, Indian ricegrass, spiny hopsage, winterfat, cheatgrass.

Mobile D (ED-10). Mobile D is also within an area of recently burned sagebrush type vegetation. Plants observed include broom snakeweed, shadscale saltbush, bud sagebrush, rubber rabbitbrush, tumblemustard, cheatgrass, and filaree.

Mobile E (ED-25). The vegetation at Mobile E can be classified as a sagebrush type. Plants observed include bud sagebrush, winterfat, bottlebrush squirreltail, Indian ricegrass, cheatgrass, tumblemustard, four-wing saltbush, and black sagebrush.

Gabbs Valley

EW-72. This site is characterized by greasewood type vegetation. Plants observed in the western two-thirds of this site include Bailey's greasewood, shadscale saltbush, Shockley's wolfberry, greeenmolly kochia, evening primrose, smooth desert dandelion, halogeton, and Russian thistle. In the eastern one-third of the site, black greasewood, seepweed, shadscale saltbush, Bailey's greasewood, smooth desert dandelion, halogeton, and evening primrose were observed. The only grass was cheatgrass, located under the proposed powerline.

Mobile A (GV-2). The vegetation at Mobile A is highly disturbed due to gravel operations and can be classified as a sagebrush type. Plants observed during the survey include Bailey's greasewood, Shockley's wolfberry, burrobush, bud sagebrush, shadscale saltbush, halogeton, bottlebrush squirreltail, galleta (Hilaria jamesii), and Nevada ephedra.

Mobile B (GV-4A). The vegetation at Mobile B can be classified as shadscale type. Plants observed during the survey include black greasewood, shadscale saltbush, seepweed, smooth desert dandelion, evening primrose, and halogeton.

Mobile C (GV-14). The shadscale type vegetation at this site includes Bailey's greasewood, bud sagebrush, shadscale saltbush, Indian ricegrass, cheatgrass, Russian thistle, tumblemustard, pincushion, smooth desert dandelion, buckwheat, halogeton, Shockley's wolfberry.

Mobile D (GV-16). The greasewood type community at Mobile D includes black greasewood, inland saltgrass, seepweed, and shadscale saltbrush.

Mobile E (GV-20). The shadscale type vegetation is at the edge of a gravel pit. Plant species observed include cheatgrass, Russian thistle, rubber rabbitbrush, Bailey's greasewood, bud sagebrush, and globemallow.

Smith Creek Valley

EW-73. EW-73 is within a shadscale type community. Vegetation consisted almost entirely of shadscale, with scattered Indian ricegrass in the understory. In the general vicinity and along the utility corridor, vegetation consisted primarily of sagebrush, scattered rabbitbrush, and a sparse understory of bunch grass. As the soil becomes finer, shadscale becomes dominant, with some rabbitbrush present. Spiny hopsage and winterfat appeared farther down the slope. At the margins of the dry lakebed, saltgrass was dominant, although sparse. The vegetation at the other end of the dry lakebed consisted primarily of shadscale and saltsage, also known as four-wing saltbush. One grizzly bear prickly pear cactus was observed (Western Foundation of Vertebrate Zoology 1993).

Communications Hub (SC-11). This site can be characterized as a sagebrush type. Much of the vegetation is disturbed due to construction of roads many years ago. Plants observed include Wyoming big sagebrush, Douglas' rabbitbrush, broom snakeweed, bud sagebrush, globemallow, bottlebrush squirreltail, Indian ricegrass, shadscale saltbrush, Russian thistle, tumblemustard, and halogeton.

Mobile A (SC-2). The vegetation at this site is sagebrush type.

Mobile B (SC-7). The community at Mobile B can be classified as shadscale type. Plants at the site include bud sagebrush, shadscale saltbrush, bottlebrush squirreltail, tumblemustard, and halogeton.

Mobile C (SC-9). The plants in the shadscale type community at Mobile C include bud sagebrush, shadscale saltbrush, bottlebrush squirreltail, Sandberg's bluegrass, halogeton, and tumblemustard. Many of the mature shadscale saltbrush plants are dead, but there are live seedlings of this species as well as seedlings of bud sagebrush.

Mobile D (SC-15). The sagebrush type community at Mobile D includes Wyoming big sagebrush, bottlebrush squirreltail, Sandberg's bluegrass, cheatgrass, globemallow, black sagebrush, tumblemustard, and bud sagebrush.

Mobile E (SC-21). The sagebrush type community at Mobile E is in a gravel pit with rubber rabbitbrush at the edge of a cleared area.

Big Smoky Valley

EW-74 (Communication Hub and Mobile A). The plants in this shadscale type community at EW-74 include bud sagebrush, shadscale saltbrush, bottlebrush squirreltail, Indian ricegrass, pincushion, tumblemustard, pussytoes, spiny hopsage, and broom

snakeweed. One sand cholla, a federal species of concern, was observed within the site in 1999 (Rathbun 1999).

Mobile B (BSV-5). Mobile B is within a shadscale type community. Plant species at this site include bud sagebrush, shadscale saltbrush, spiny hopsage, Indian ricegrass, bottlebrush squirreltail, and cheatgrass.

Mobile C (BSV-6). The plant community at Mobile C is a shadscale type. The site is adjacent to a gravel pit and is now revegetated with bud sagebrush, shadscale saltbrush, tumblemustard, prickly pear (Opuntia sp.), Russian thistle, pincushion, winterfat, spiny hopsage, Indian ricegrass, bottlebrush squirreltail, and cheatgrass.

Mobile D (BSV-7). The shadscale type community at this site is adjacent to a gravel pile. Plants at the site include bud sagebrush, shadscale saltbrush, spiny hopsage, Indian ricegrass, bottlebrush squirreltail, Sandberg's bluegrass, Wyoming big sagebrush, tumblemustard, pepperweed (Lepidium sp.), and cheatgrass.

Mobile E (BSV-16). This site is characterized by sagebrush type vegetation. The vegetation at the southern portion of this site was disturbed by highway construction and is partially revegetated with bud sagebrush, Wyoming big sagebrush, pepperweed, and tumblemustard. Plants in the undisturbed portion of the site include Wyoming big sagebrush, bud sagebrush, shadscale saltbrush, Sandberg's bluegrass, spiny hopsage, tumblemustard, Indian ricegrass, bottlebrush squirreltail, pepperweed, and cheatgrass.

EW-10 (Expansion Site)

The plant community at EW-10 is a shadscale type. At least 40 percent of the vegetation within the existing and proposed sites has been disturbed. The vegetation at the site is the same as that in the surrounding area and consists primarily of shadscale saltbrush overstory, with Russian thistle and Indian ricegrass in the understory. Winterfat is apparent in small numbers at the site (Western Foundation of Vertebrate Zoology 1993). Other species at the site include Bailey's greasewood, bud sagebrush, littleleaf horsebrush, shadscale, verbena, evening primrose, birdcage evening primrose, cheatgrass, needleandthread, penstemon, Nevada dalea, and fiddleneck.

EW-75

EW-75 is within a shadscale type community. Plants observed include cheatgrass, tumblemustard, Russian thistle, filaree, tamarisk, and Russian knapweed.

EW-76

The plant community at EW-76 is a shadscale type.

EW-77

EW-77 is a playa with a greasewood type community.

TIS Sites

The vegetation at all of the TIS sites is pinyon-juniper type. The proposed sites are located on ridge tops at elevations ranging from 6,600 feet to 8,645 feet above mean sea level. Plants observed during the site surveys of the proposed sites included black sagebrush, spiny phlox, biscuitroot, bottlebrush squirreltail, pussytoes, Sandberg's bluegrass, Idaho fescue, common pricklygilia, longleaf phlox, spiny phlox, daisy, evening primrose, littleleaf horsebrush, milkvetch, green ephedra, buckwheat, lupine, Indian ricegrass, Douglas' rabbitbrush, rubber rabbitbrush, larkspur, singleleaf pinyon, Thurber's needlegrass, Lemmon's needlegrass, mountain big sagebrush, broom snakeweed, common pricklygilia, and bush oceanspray (Rathbun 1998).

Fiber Optic Cable

Route to B-16. The fiber optic cable route to B-16 crosses through greasewood and shadscale type vegetation. Plants observed along the route include shadscale saltbrush, Bailey's greasewood, bud sagebrush, alkali seepweed, seepweed, evening primrose, halogeton, foxtail barley, littleleaf horsebrush, black greasewood, cheatgrass, rubber rabbitbrush, pepperweed, foxtail barley.

Route to B-19. The fiber optic cable route to B-19 crosses through greasewood and shadscale type vegetation.

B-17, B-19, and Dixie Valley

Ecological field investigations conducted between the summers of 1996 and 1997 at NAS Fallon, the existing training ranges B-16, B-17, and B-19, and the Dixie Valley landholdings identified 458 vascular plant species (US Navy 1997d). These species comprised 20 different upland habitat types and eight wetland plant communities on NAS Fallon and training ranges B-16, B-17, and B-19. Twelve additional upland vegetation types (e.g., industrial, dune, residential) were mapped at NAS Fallon; however, these areas were not sampled due to either limited extent of the habitat, a lack of vegetation, or inaccessibility.

The lands at the air station contained the highest diversity of vegetation, with 209 different species. The B-17 training range had 179 different species, the B-19 training range had 89 species, and the B-16 training range had 87 species.

Upland Communities

Of the 30 upland plant communities identified at NAS Fallon, the training ranges, and the Dixie Valley landholdings, half of these are distinct and well-defined, based on associations of species or unique physiographic criteria. The common plant species-defined communities include Wyoming big sagebrush/common rabbitbrush, black sagebrush, Bailey's greasewood-shadscale/galleta, Indian ricegrass, alkali mixed scrub, black greasewood/Indian ricegrass, and upland rabbitbrush. The physiographically defined communities contain sodic dunes, valley wash, mixed dune scrub, and badlands. In addition, many of the lands at the air station and on the training lands have been disturbed by human activities. Species composition in these areas is dominated by agricultural species and nonnative invasive species, such as Russian thistle, cheatgrass, halogeton, Russian knapweed, white-top, and other nonnative landscape species.

Wetland Habitats

Eight wetland habitats were identified and quantitatively sampled during the ecological inventory. These include saltgrass meadow dominated by inland saltgrass, sedge-spikerush meadow dominated by sedges and spikerushes, bulrush marsh dominated by bulrushes, iodinebush wetland dominated by iodinebush and quail bush, forested riparian wetland dominated by willows and a diverse understory, alkali riparian wetland dominated by inland saltgrass and alkali bulrush, artificial ponds dominated by cattails along the banks, and artificial ditches dominated by cattails and a variety of grasses along the banks. These wetland habitats are distributed among the NAS Fallon lands, the Dixie Valley landholdings, and training ranges B-17 and B-19.

3.3.3 Wildlife

Wildlife species that exist within the region include invertebrates, fish, amphibians, reptiles, birds, and mammals. The BLM administers programs to promote habitat for game and nongame species. Table F-2 in Appendix F lists animals that have been observed in the ROI. Detailed data on ecological conditions on lands administered by NAS Fallon is provided in the Ecological Inventory of NAS Fallon and Environs (US Navy 1997d). General data on wildlife within each training range and landholding are provided in the *Final Legislative Environmental Impact Statement for the Renewal of the B-20 Land Withdrawal* (US Navy 1999a) and the *Final Environmental Impact Statement for the Withdrawal of Public Lands for Range Safety and Training Purposes* (US Navy 1998c).

EW Sites

Common invertebrate observed in the region include ants and grasshoppers. Reptiles include side-blotched lizard and long-nosed leopard lizard. Bird species observed near the EW sites are horned lark, common raven, prairie falcon, and sage sparrow.

Several large species of mammals, including desert bighorn sheep, pronghorn antelope, mule deer, and wild horses, are likely to exist in the region. Mule deer is the most important big game species in the region and tends to be concentrated in adjacent mountain ranges, such as the Stillwater, Clan Alpine, and Desatoya mountain ranges, although it also is commonly found in valleys (NDOW 1982). Bighorn sheep have been reintroduced in the Clan Alpine Mountain Range and also are found in the Sand Springs Mountain Range, the Lauderback Mountain Range, Chalk Mountain, the Fairview Peak/Slate Mountain Range, and the Stillwater Mountain Range. Big game guzzlers are in the Fairview Peak and Slate mountain ranges. At the proposed EW sites, kangaroo rat burrows, pocket mouse burrows, badger burrows, and a desert woodrat nest have been observed, along with evidence of black-tailed jackrabbit, ground squirrel, coyote, and bobcat (Western Foundation of Vertebrate Zoology 1993). The EW sites also show sign of cattle and wild horses. Signs of wild horses were observed at the proposed Edwards Creek Valley fixed and mobile sites and at two mobile sites in Gabbs Valley (Rathbun 1999).

TIS Sites

The proposed TIS sites had somewhat limited use by animals. No wildlife was noted at TIS-37. At TIS-45, old horse manure and a few rodent burrows were observed. At TIS-47, a small flock of birds that were probably pinyon jays were seen at a distance, but no tracks or droppings were observed (Rathbun 1999). TIS-49 would be developed on one of two existing non-Navy communication sites.

B-17, B-19, and Dixie Valley

Invertebrates. A wide variety of invertebrates were identified at NAS Fallon, the training ranges, and the Dixie Valley landholdings during the ecological inventory, including annelids (one species), mollusks (two species), crustaceans (five species), arachnids (one species), and insects (21 species). Once a year, tarantula spiders migrate along Scheelite Mine Road, just west of B-17. This migration generally starts in September and lasts about four to six weeks.

Fish. Seven game fish species and approximately 15 species of nongame fish exist in the reservoirs and deeper wetlands in the Lahontan Valley (USFWS 1995).

Amphibians and Reptiles. Eleven species of reptiles and two species of amphibians were observed during the ecological inventory, and another 12 reptile and two amphibian species were incidentally observed during other surveys. Common amphibian and reptile species include western fence lizard, side-blotched lizard, gopher snake, and Great Basin rattlesnake.

Birds. Bird species in the Lahontan Valley region include waterfowl, shorebirds, colony-nesting and other marsh birds, songbirds, and raptors. Changes in water management, including declining wetlands and increased development in the region, are believed to have adversely affected the abundance and diversity of birds in the area (USFWS 1995). During quarterly avian surveys on NAS Fallon lands, 126 bird species were observed. The highest bird diversities in all areas occurred during the spring and fall migration periods. Avian species richness and abundance was relatively low in the arid training ranges.

Mammals. Several different species of large and small mammals, including bats, have been observed, trapped, or are likely to exist on lands administered by NAS Fallon. Large predatory mammals, such as coyotes and mountain lions, either have been observed or are likely to use NAS Fallon lands. Midsized mammals, such as weasels, badgers, skunks, jackrabbits, bobcats, and kit foxes, have been directly observed or are likely to exist on all NAS Fallon lands. Eleven small mammal species have been trapped within NAS Fallon lands, including training ranges B-16, B-17, and B-19. Kangaroo rats were the most abundant small mammal species on the training ranges, whereas deer mice were most abundant on the more water-rich air station. Surveys conducted during 1996 and 1997 at NAS Fallon, the training

ranges, and the Dixie Valley landholdings observed nine bat species (US Navy 1997d).

3.3.4 Wetlands and Other Waters of the US

Wetlands and other waters are considered sensitive habitats because they perform significant biological functions, such as providing nesting, breeding, foraging, and spawning habitat for a variety of resident and migratory animal species (US Army Corps of Engineers [USACE] Regulatory Program Regulations, 33 CFR 320.4). Wetlands are defined by the USACE regulations as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3(b); 1984). No jurisdictional wetlands have been located on any Navy training lands except Dixie Valley landholdings and a fenced pond near the western entrance to B-19. No ordnance is expended in these areas, and current military activities are not known to impact these wetlands.

EW Sites

Two of the mobile EW sites may be in or near waters of the US. Mobile C in Smith Creek Valley (SC-9) is at the top of a lake bar. It includes several small bare spots that appear to be playa or erosional features. Areas to the west of Mobile D in Gabbs Valley (GV-16) have salt-crusted soils and wetland indicator plant species (alkali sacaton and inland salt grass), which indicates periodic moist soil conditions.

TIS Sites

None of the TIS sites are proposed to be located in or near potential jurisdictional waters of the US.

Fiber Optic Cable

Portions of the fiber optic cable route within or near B-16 and B-19 cross canals that may be within jurisdictional waters of the US and protected under Section 404 of the Clean Water Act (Rathbun 1999). The portion of the proposed fiber optic cable route from the Truckee-Carson Irrigation District (TCID) Irrigation Canal west to B-16 includes one short section that may be waters of the US. Portions of the route from the west boundary of B-16 to the South Observation Tower also include sections that may be waters of the US.

B-17, B-19, and Dixie Valley

A jurisdictional wetland delineation has not been conducted on lands administered by NAS Fallon. Wetlands in the B-17 and B-19 training ranges and the Dixie Valley landholdings are described in terms of plant communities in the vegetation section. These areas may contain jurisdictional waters of the US.

3.4 Geology, Soils, and Mineral Resources

This section provides an overview of regional and site-specific geology, soils, and mineral resources for training ranges and proposed EW and TIS sites.

3.4.1 Regional Geologic Background

NAS Fallon and the FRTC are in the western portion of the Great Basin geomorphic province. Extensional faulting in this region has resulted in the formation of down-dropped valleys bounded by small, north-trending mountain ranges. The valleys tend to be internally draining closed basins with playas. Pleistocene lakes, including the Ancient Lake Lahontan, which covered much of the northwestern Great Basin several times from 1.2 million years ago to 10,000 years ago, inundated the basins of the area and deposited thick clay beds. Riverine deltas from the Truckee and Carson Rivers also deposited sand, gravel, silt, and minor amounts of clay in the region.

Basaltic volcanism has occurred in isolated areas in the region during the past 20,000 years, resulting in hot springs and other geothermal features, as well as rich ore deposits from mineralization associated with hydrothermal activity. Much of Nevada is seismically active with substantial movement occurring in the region of the Stillwater Range and the Clan Alpine Mountains in central Churchill County (Stewart 1980).

The mineral industry in the area is predominantly associated with exploring for, developing, and mining metals and industrial minerals. Major metals and minerals include gold, silver, copper, mercury, manganese, nickel, tungsten, antimony, barite, and turquoise. In addition to several large commercial mines, there are thousands of smaller claims throughout the area. Some mineral areas are patented, which makes the land private property. Unpatented claims remain public and under multiple use management, as defined by the BLM. Management objectives for mineral resources encourage mineral development while mitigating potential impact to the extent possible.

3.4.2 Site-specific Geology, Soils, and Mineral Resources

To assess the proximity of mining claims and casual use mines to the proposed project sites, a search of the BLM Geographic Index to Mining Claims (GIMC) was conducted. The geographic index lists only mining claims by township, range, and quarter section. Results of the search related to project sites are provided below in the site-specific descriptions.

Training Ranges and Dixie Valley Area

No mining claims are located on any Navy-administered lands.

B-17 Training Range. B-17 is in Fairview Valley, which is the southern extension of Dixie Valley. It is separated from Dixie Valley by a low topographic divide. Fairview Valley is bounded by the Sand Springs Range on the west, which appears to be an extension of the Stillwater Range, and by Fairview Peak and Slate Mountain on the east. The basin floor is at an elevation of about 4,500 feet. Fairview Peak is the highest point with an elevation of 8,243 feet. Fairview Valley is underlain by Quaternary alluvial deposits. The northwestern corner of the area contains a playa lakebed. The uplands to the east are underlain by Tertiary volcanic rocks, including welded and nonwelded ashflow tuffs that range from 17 to 34 million years old (US Navy 1999a; Stewart 1980).

The eastern half of B-17 overlaps the Fairview/South Fairview mining district. B-17 is considered to have moderate to high potential for small- to medium-sized silver and gold deposits, based on known deposits in the Fairview mining district. The geothermal resource potential in B-17 is considered to be low (SAIC and DRI 1991).

B-19 Training Range. B-19 is in a small, closed basin south of the White Throne Mountains. The bottomlands of this basin include Rawhide Flats and Alkali Flats, where the elevation is about 4,000 feet. The basin is bounded on the northeast by the Blow Sand Mountains and on the southwest by the Terrill Mountains. The maximum elevation of the surrounding mountains is about 6,000 feet. Most of B-19 lies on the basin lowlands, although it extends onto the adjacent slopes. The basin is underlain by Quaternary alluvium, with a playa lakebed running through the southwest quadrant of the area (US Navy 1999a; Stewart 1980).

B-19 overlaps the Cinnabar Hill mining district. The Cinnabar Hill mining district contains hydrothermal ore deposits, including mercury, associated with the highly fractured volcanic rocks exposed across much of B-19. Based on known resources, B-19 is considered to have high potential for additional discoveries of precious metal deposits. B-19 is near Lee Hot Springs, and geothermal fluids associated with the hot springs may extend into B-19. Therefore, B-19 is considered to have better than average geothermal resource potential (SAIC and DRI 1991).

B-20 Training Range. B-20 is underlain by thick alluvial fill and playa lakebed deposits. The deposits near the surface are of Quaternary age or younger. Most of the soils within B-20 (approximately 40,000 acres) are classified as playa, a typical soil of the Carson Sink (NRCS 1986).

Dixie Valley Area. Navy-administered lands in the Dixie Valley are in the northern portion of Dixie Valley at the foot of the eastern slope of Table

Mountain in the Stillwater Range. The elevation is about 3,500 feet and the nearest peak has an elevation of over 6,000 feet. Dixie Valley is separated from the Carson Desert by the Stillwater Mountains to the west and by the Clan Alpine Mountains to the east. A number of mines are in the adjacent mountains.

EW Sites

Edwards Creek Valley. Edwards Creek Valley is a closed basin, containing a playa lakebed at its northern end. As is typical of the region, the surrounding ranges have a core of Mesozoic sedimentary rocks (exposed, for example, on Healy Peak), which are overlain by Tertiary volcanic deposits, consisting predominantly of ashflow tuffs 17 to 34 million years old (US Navy 1999a; Stewart 1980). No mining claims were identified within the same township, range, and section as any of the proposed EW sites.

Gabbs Valley. Gabbs Valley is a closed basin south of Fairview Valley and is separated from it by a ridge of mountains that include the southern extension of the Sand Springs Range. The deepest portion of the valley is an alkali flat. Several of the surrounding peaks are above 8,000 feet. The basin is bounded on the south by the Gillis and Gabbs valley ranges and on the north by the Monte Cristo Mountains and Broken Hills.

The surrounding mountain ranges are intensively mined for precious metal deposits. The BLM GIMC indicates that there are four unpatented mining claims within the same township, range, and section as mobile site A (BLM file numbers 59566 and 30234). A patented claim withdrawing land for a public water reserve and a patented claim for a national site are within the same township, range, and section as mobile sites B and E, respectively, but occupy different portions of the section.

Smith Creek Valley. Smith Creek Valley is a closed basin with a playa lakebed in the lowest portion of the valley. The elevation of the basin floor is just above 6,000 feet. The basin is bounded on the west by the Desatoya Mountains and on the east by the Shoshone Mountains. Several peaks at the southern end of the Shoshone Mountains are over 10,000 feet in elevation. No mining claims were identified within the same township and range as any of the proposed EW sites.

Big Smoky Valley. Big Smoky Valley is a long narrow valley bounded on the west by the Toiyabe Range and on the east by the Toquima Range. The basin floor is at an elevation of about 5,500 feet. Several of the peaks within these ranges are above 11,000 feet in elevation. No mining claims were identified within the same township and range as any of the proposed EW sites.

TIS Sites

All TIS sites are located along mountain ridges. No mining claims were identified in the same township and range as any of the proposed TIS sites.

3.5 WATER RESOURCES

Water resource issues discussed in this section include regional surface water and ground water, water quality, and flooding and drainage.

3.5.1 Regional Hydrology

For purposes of the discussion of surface water and ground water conditions, the FRTC is subdivided into hydrologic units, which are geographic areas defined by hydrologic boundaries. Watersheds are the basic hydrologic units for surface water conditions, and ground water basins are the basic hydrologic units for ground water. Within the FRTC area, ground water basins are generally independent alluvium-filled valleys bounded by mountain ranges. In some cases, ground water from one basin may flow into another basin. Often, there is insufficient information to fully characterize this flow between basins.

Watersheds are defined by the geographic region in which surface runoff would eventually drain to a selected water body, such as a stream reach or lake.

The following is a summary of the hydrologic units representing the regions of influence for each of the proposed FRTC activities. Only those hydrologic units containing a proposed activity are included in the discussion below.

3.5.2 Site-specific Hydrologic Conditions

Training Ranges and Dixie Valley Area

B-17 Training Range. B-17 is at the lower end of the Fairview Valley ground water basin, which is a subbasin of the Dixie Valley basin. The watershed of Fairview Valley is separated from the Dixie Valley by a low topographic divide that extends to the northwest from near the northeast corner of B-17. No perennial water bodies are present at B-17; however, water has been recorded as ponding within the range boundary during wet years.

Dixie Valley Area. Navy-administered lands in the northern Dixie Valley are about eight miles north of the Humboldt Salt Marsh, the playa lake where the surface drainages of Dixie Valley terminate. The lands are on the alluvial fan of Cottonwood Canyon, which discharges from the Stillwater Range, and lie near the junction of Shoshone Creek and Spring Creek, the principal ephemeral drainages at this end of the Dixie Valley. The USGS topographic map of the area shows several wells in the general area, at elevations of about 3,450 feet. This is about the same elevation as the toe of the alluvial fan of Cottonwood Canyon. Based on this information, it seems likely that good quality ground water may be present at shallow depth beneath the site, above the elevation of the playa lakebed.

B-19 Training Range. B-19 is in the Rawhide Flats basin, which is the terminal basin of the Rawhide Flats watershed. No perennial water bodies are present at B-19; however, water has been recorded as ponding within the range boundary during wet years.

B-20 Training Range. B-20 is in the watershed of the Carson Desert Hydrographic Basin, the terminal subbasin of the larger Carson River basin. The Carson Desert is also a terminal ground water basin, meaning that the ground water has no outlet to another basin. No perennial water bodies are present at B-20. During wet years, seasonal ponding of water may occur within topographic depressions.

EW Radar Sites

Proposed EW sites would be developed on nearly flat terrain, in desert valleys where the water table is relatively close to the surface. No perennial surface water bodies are present at any of the sites.

Edwards Creek Valley. The Edwards Creek Valley watershed drains to a playa lakebed. A number of springs or seeps occur along the margin of the basin floor, on the west side of the basin. The seeps likely occur at the geologic contact between course alluvium from the fans emanating from canyons in the Clan Alpine Mountains and fine-grained lakebed deposits on the valley floor. The valley is a terminal ground water basin. It is estimated by the USGS that most (approximately 700,000 acre-feet) of the valley's ground water lies in the upper 100 feet of unconsolidated valley fill (Everett and Rush 1964).

Gabbs Valley. The Gabbs Valley watershed drains internally to a playa lakebed at about 4,200 feet, shown on topographic maps as an alkalai flat. As shown on the USGS topographic map of the area (USGS 1985), there are numerous wells in the vicinity of the proposed EW Site 72. The basin is a terminal ground water basin. Ground water reportedly contains elevated levels of sodium, sulfate, fluoride, and possibly boron. The water table in Gabbs Valley varies but is usually near the land surface (Nevada Department of Conservation and Natural Resources 1962).

Smith Creek Valley. The Smith Creek Valley watershed, which extends from about Fairview Peak in the south to just north of Highway 50 in the north, drains into a playa lakebed. USGS topographic maps of the area indicate a number of wells located on the valley floor at elevations above about 6,100 feet, or just a little above the elevation of the playa. There is also a

cluster of hot springs located adjacent to the west side of the playa. Fresh springs are present on the margins of the basin, but most of the springs are at higher elevations, in the surrounding mountains. The valley is a terminal ground water basin. Ground water beneath the central portion of the valley is a highly mineralized sodium bicarbonate type, which suggests a relatively recent origin. The water table in Smith Creek Valley varies but is usually only a few feet below the surface (USGS 1964).

Big Smoky Valley. The Big Smoky Valley watershed, which extends from just south of the town of Hadley roughly to Eagle Buttes, drains to a playa lakebed. The valley is a terminal ground water basin. Based on information from the topographic map coverage of the area (USGS 1978), it seems likely that good quality ground water might be obtained from depths of less than 100 feet in the northern part of the valley. This is consistent with information reported by the Nevada Department of Conservation and Natural Resources (1971).

TIS Sites

All of the proposed TIS sites are on mountaintops or saddles. These represent the upper portion of the watersheds, in which recharge for the basin aquifers is collected. No perennial water bodies are present at any of the proposed sites.

3.6 CULTURAL RESOURCES

This section describes cultural resources in the region, which include archaeological or historical objects, sites, areas, buildings, structures, and places.

3.6.1 Regional Cultural Resources

The lands addressed in this EIS were occupied prehistorically over a long time period. As a result, archaeological sites exist throughout the area. These sites include petroglyphs, pictographs, rock alignments, rock shelters, caves, quarry sites, camp and task sites, and the Stillwater Marsh District. Some have been listed on the National Register of Historic Places, including the Stillwater Marsh District. Historic sites in the region include roads and associated transportation features, mining-related areas, town sites, ranches and agricultural features, woodcutting and processing sites, and irrigation and water networks. Some of the more prominent sites include the Boyer-Gilbert Ranch, the Newlands Reclamation Thematic District, the Austin Historic District, the Pony Express Trail, and the Overland Wagon Route.

3.6.2 Site-specific Literature and Surveys

In 1999, an initial literature search was conducted by Tetra Tech, Inc., and additional searches were conducted later by the Navy and the BLM. Institutions visited include the BLM Carson City and Battle Mountain Field Offices, the Nevada State Museum, and the Truckee Carson Irrigation District. In addition, discussions were held with the Bureau of Reclamation regarding the Newlands Project and with interested parties concerning the Pony Express Trail. Between 1996 and 1999, a Class III pedestrian inventory was conducted for all the proposed action and alternative site locations. Under Section 106 consultation, a final technical report has been submitted to the Nevada State Historic Preservation Office. Consultation resulted in a finding of "No Historic Properties Affected" for this undertaking.

The inventory results are listed below. Please note that isolates are not eligible for the National Register.

Edwards Creek Valley

No cultural resources were located at proposed EW-71 or Mobiles A, B, C, and D. One prehistoric isolate was located at Mobile E. For EW-71, visual impacts were assessed for the Pony Express Trail and the Overland Freight Route.

Gabbs Valley

No cultural resources were located at proposed EW-72 or Mobiles A, B, C, and E. One historic isolate was found at Mobile D.

Smith Creek Valley

No cultural resources were located at proposed EW-73, the communication hub, or Mobiles A, C, D, and E. One prehistoric resource was located within the impact area of the proposed powerline.

Big Smoky Valley

No cultural resources were located at proposed EW-74, the communication hub, or Mobiles A, B, C, D, and E. For the communication hub, visual impacts were assessed for the Overland Freight Route.

Other EW Sites

No cultural resources were located at proposed EW-77; a portion of the delineated boundary of the Boyer-Gilbert Ranch is within the proposed EW-75 site location, and one prehistoric resource was located at EW-10 (expansion site).

TIS Sites

No cultural resources were located at proposed TIS 37, 45, 47, and 49.

Fiber Optic Cable

The fiber optic cable route would begin at the Range Control building (800 complex), a historic property. For the entire route, the cable would cross 18 canal features associated with the Newlands Project, a District listed on the National Register of Historic Places District. In addition, the route to B-16 and B-19 would cross two prehistoric archeological resources.

3.7 Native American Religious Concerns/Traditional Cultural Values

Pursuant to federal laws and executive order, sites or specific areas significant to Native American religious or other cultural activities will be afforded the maximum consideration under the law.

Numerous plant, animal, and mineral resources are still utilized by Native American tribes and access to resources as well as effects of proposed projects may be of concern.

Under the direction of the National Historic Preservation Act of 1966, as amended, federal agencies must make a good faith effort to identify traditional cultural properties (TCPs). TCPs are either listed in or eligible for listing in the NRHP because of their association with cultural practices or the beliefs of a living community. For example, mountain ranges play a predominant role in Native American spiritual practices and religious beliefs. Individual mountain peaks often are identified as significant to the cultural beliefs of a Native American tribe. TCPs can be associated with Native American or other ethnic groups. No other ethnic groups have expressed cultural concerns relative to the area subject to the proposed Navy activities in this EIS. Consultation with affected tribes has been completed.

3.8 Visual Resources

This section describes the visual quality of lands in the ROI. The ROI for visual resources includes the areas around proposed EW sites, TIS sites, fiber optic cable routes, and target developments on B-17 and B-19.

The BLM Visual Resource Inventory Manual H-8410-1 provides a Visual Resource Management (VRM) methodology for evaluating the visual resources for BLM lands (BLM 1986a). According to the VRM methodology, the scenic visual resources in an area are defined by three factors—scenic quality, viewer sensitivity, and viewer distance zones.

The first factor, scenic quality, provides a measure of the visual appeal of an area based on features such as topography, vegetation, water, adjacent scenery, scarcity, and human modifications. The second factor, viewer sensitivity, is a measure of public concern for scenic quality; viewer sensitivity is determined by factors such as the number and type of users, level of public interest, adjacent land uses, special areas, or other factors. The third factor in determining the scenic quality of an area is a delineation of viewer distance zones. The landscape is divided into three distance zones relative to the

observation points or travel routes. The foreground-middleground zone in which details of a landscape or proposed action can be seen extends approximately three to five miles from a viewpoint. The background zone is the remaining area that can be seen from a viewpoint where only form or outline of objects can be detected. The background zone extends approximately 15 miles from a viewpoint. The seldom seen zone includes those areas not visible from a viewpoint or that are beyond the background zone.

Based on these three factors, BLM lands are placed in one of four visual resource inventory classes. Classes I and II are the most valued, class III represents moderate value, and class IV is least valued. Visual resource inventory classes are used as the basis for considering visual values in the resource management planning process.

BLM Battle Mountain Field Office has designated lands under its jurisdiction as class IV, III, or II, with the majority designated as class IV. The BLM Carson City Field Office has not assigned final VRM classes to the affected areas within its administration area. According to BLM policy, interim visual management objectives may be established for proposed projects. The potentially affected areas within Dixie Valley, Edwards Creek Valley, and Gabbs Valley are assumed to be class III designated lands (Knight, Terry. Personal Communication. May 20, 1999).

3.8.1 Visual Character of the FRTC

The scenic features of the FRTC are characteristic of the Great Basin area of the western United States. The form, line, color, and texture of the landscape are influenced by the arid climate. Gold and brown hills diffuse into steep rugged mountains. Alkali flats and low desert brush dominate the valley lowlands, allowing expansive views from the valleys to the surrounding mountains. The higher elevations support sagebrush, juniper, and pinyon pine that provide visual diversity and contrasting darker color along ridgelines in the distant background. Vegetation grows low and evenly on the valley floor and primarily consists of monochromatic desert brush. Cultural modifications in the study area include existing roads, utility lines, radar equipment (including EW, TACTS, and visual cueing device sites), fences, and scattered residences.

Visual sensitivity in the FRTC is related to major roads through the area and the Pony Express National Historic Trail, because public access to most landscapes within the range area is limited. Landscapes within the foreground-middleground of Highway 50, Highway 95, and the Pony Express National Historic Trail generally have higher viewer sensitivity. Highway 50 is part of a National Parks Service proposed National Trails System trail called the American Discovery Trail.

3.8.2 Site-specific Visual Resources

The following descriptions characterize the scenic quality and viewer sensitivity of the lands where changes to the visual landscape would occur.

EW Radar Sites

Edwards Creek Valley. The Edwards Creek Valley is bounded by the Clan Alpine Mountains to the west, the New Pass Range to the north and east, and the Desatoya Mountains to the south. Alluvial fans extend into the valley from the surrounding mountains. The valley floor is flat and contains a dry, alkali lakebed. The dominant visual features in the Edwards Creek Valley are the bold ridgelines of the surrounding mountains and the flat valley floor.

Vegetation within the valley is mostly low shrubs, and the dominant colors are muted shades of brown and green. There are very few cultural modifications within the valley other than Highway 50 and utility lines on either side of Highway 50.

Gabbs Valley. Gabbs Valley is a bowl-shaped valley, surrounded by the Gabbs Valley Range to the southwest, the Paradise Range to the east, and other hills to the north and east. The valley floor is flat and contains a dry, alkali lakebed. A small ridge runs north-south across the eastern end of the valley. The

dominant visual feature is the panoramic view of the valley and surrounding mountains.

Vegetation in Gabbs Valley is predominantly low shrubs, and colors are monochromatic shades consistent with the arid landscape. Numerous mining operations can be seen in the valley and the surrounding hills.

Smith Creek Valley. Smith Creek Valley is a northeast-southwest trending valley with the Desatoya Mountains to the west and the Shoshone Range to the east. Gently sloping alluvial fans extend into the valley from the adjacent mountains, and the valley floor contains an alkali flat. Panoramic views of the surrounding mountains and valley floor are the dominant visual features.

Vegetation is mostly low shrubs, and the overall coloration is of uniform shades of brown and green associated with the sparsely vegetated arid landscape. There are few cultural modifications in the valley. An utility line runs along the east side of the valley.

Big Smoky Valley. Big Smoky Valley is a northeast-southwest trending valley situated between the Toiyabe Range to the east and the Toquima Range to the west. The dominant natural features are the surrounding mountain ridgelines in the background and flat valley terrain in the foreground-middleground. Vegetation is mostly low shrubs and color is characteristically monochromatic.

There are few cultural modifications in the valley, though two utility lines currently traverse the area, affecting the valley and mountain panorama.

EW-10. The existing EW-10 site is located in the Fairview Valley, approximately two miles north of Highway 50 (Figure C-14). Vegetation is low, desert shrubs. EW-10 is in the foreground-middleground of the landscape for viewers on Highway 50. The chain link fence, as well as the fenced-in area directly south of EW-10, are somewhat visible from the highway. Existing utility lines run to the west of the facility, dominating the foreground-middleground view.

TIS Sites

TIS-37. TIS-37 is in the Desatoya Mountains, approximately six miles southwest of New Pass (Figure C-17). The site is just east of the top of a gently rounded hill at an elevation of approximately 8,500 feet. Sparse shrubs are the dominant vegetation at the site, although scattered pinyon pine are east of the site and partially obstruct the view into Edwards Creek Valley. The area is uniform shades of brown and green associated with the arid landscape.

TIS-45. TIS-45 is on a small peak in the Shoshone Mountains approximately 0.5 miles northeast of Emigrant Peak (Figure C-18). The site is at approximately 7,800 feet. Scattered brush and rock characterize the site, and uniform shades of brown and green are the dominant color values. The site offers expansive views of Smith Creek Valley to the west and Reese River Valley to the east. Scattered pinyon pine surround the site and partially obstruct views.

TIS-47. TIS-47 is in the Toquima foothills overlooking the Monitor Valley at an elevation of approximately 6,400 feet (Figure C-19). The site is set back from the edge of a bluff, away from the gradual slopes of the foothills. The vegetation is patchy, monochromatic desert brush.

TIS-49. TIS-49 is in the Fish Creek Mountains on one of two existing non-Navy communication sites (Figure C-20).

Training Areas and Dixie Valley Lands

B-17 Range. For the B-17 training range, the scenic qualities consist of a relatively flat area with sparse vegetation. The landform includes the relatively flat valley basin surrounded by the nearby ranges.

B-19 Range. At the B-19 training range, the scenic qualities consist of the relatively flat landform with surrounding hills.

B-20 Range. The Carson Sink, in which B-20 is situated, is dominated by playa. Playa tends to have little topographic relief and is monochromatic, predominantly of brown hues. The eastern side of the playa is bounded by the Stillwater Mountains, which rise over 3,000 feet above the Carson Sink. The West Humboldt Mountain Range bounds the northern and western sides of the playa.

Dixie Valley. For the Dixie Valley area, the scenic qualities include monochromatic low-lying scrub vegetation on the relatively flat valley floor, surrounded by the extensive hills and mountains of the Stillwater and Clan Alpine mountain ranges. Cattle guards, fences, and EW and TACTS sites are visible in this area.

Fiber Optic Cable Route

The scenic qualities along the fiber optic route consist of relatively flat valley floors surrounded by mountainous terrain. Highway 95 and the Pony Express National Historic Trail traverse the area.

3.9 Environmental Justice and Socioeconomics

This section describes the existing regional social and economic conditions. Specific social and economic factors addressed include population, employment, and the economy. Pursuant to Executive Order 12898, 3 CFR 859 (1995), *reprinted in* 42 USCA §4321 note at 475-79 (West 1994), and Executive Order 13045, 3 CFR 198 (1998), *reprinted in* 42 USCA §4321 note at 40-42 (West Supp. 1998), environmental justice and health and safety risks to children also are addressed.

The socioeconomic region of influence includes Churchill, Lander, Eureka, and Mineral Counties, since these are the areas in which the proposed project would result in physical changes that could affect socioeconomic resources. The principal communities within this region, whose social and economic conditions could be affected by the proposed project, include Fallon in Churchill County, Austin in Lander County, and Eureka in Eureka County. As applicable, information concerning Washoe County and Pershing County also are presented, since these areas lie beneath FRTC airspace that could experience change as a result of the proposed project. The changes in airspace designation alone are not expected to influence the social or economic environment; therefore, these counties are not discussed in detail. The Walker River Paiute Tribe, in southern Churchill County, northern Mineral County, and eastern Lyon County; the Yomba Shoshone Tribe, in northwestern Nye County; and the Fallon Paiute-Shoshone Tribe of the Fallon Reservation and Colony near Fallon are all within the region of influence.

3.9.1 Population

The population within the ROI is presented in Table 3-3 and population forecasts are provided in Table 3-4. During 1990 and 1996, the populations of five of the six counties within the ROI experienced varying levels of growth. Pershing County grew the most, and Eureka County grew the least. Mineral County's population declined during this period. Based on July 1998 estimates, all six counties grew between 1996 and 1998. Lander and Eureka Counties, in which population numbers reflect the health and fluctuations in employment in the mining industry on which their economies are based, had the lowest population growth rates. The populations of all six counties are projected to continue to expand over the next four years; although, Mineral County's projected growth would be minimal.

3.9.2 Employment and the Economy

Table 3-5 presents the most current employment figures for the industries in the ROI counties. In Churchill County, the services and government sectors had the highest employment and earnings levels in 1996. Most government employment is attributable to NAS Fallon, which has been a mainstay of the county's economy since the late 1940s. NAS Fallon directly accounts for about 30 percent of the county's total employment, including approximately 1,000 military positions, 600 civil

Table 3-3
ROI Population Estimates

County/Municipality	1990	1996	Percent Change 1990-1996	1998[1]	Percent Change 1996-1998	2002	Percent Change 1998-2002
Churchill County	18,025	21,683	20.3%	24,020	10.8%	28,620[3]	19.2%
City of Fallon	6,438	7,730[1]	20.1%	7,910	2.3%	9,836[2]	24.3%
Eureka County[4]	1,543	1,561	1.2%	1,640	5.1%	2,140[3]	30.5%
Town of Eureka	NA	510[1]	NA	540	5.9%	1,389[2]	157.2%
Lander County	6,306	6,755	7.1%	7,040	4.2%	7,860[3]	11.6%
Town of Austin	NA	405[1]	NA	944	-6.2%	1,011[2]	163.4%
Mineral County	6,445	5,836	-9.4%	6,620	13.4%	6,630[3]	0.2%
Pershing County	4,334	5,321	22.8%	7,270	36.6%	7,940[3]	9.2%
Washoe County	256,356	298,665	16.5%	311,350	4.2%	336,430[3]	8.1%

Sources: Bureau of Economic Analysis 1998b, Nevada State Demographer's Office 1998a and 1998b and 1999a.
[1]Estimate
[2]Projection
[3]Forecast
[4]Based on comments from Eureka County, the 1999 population of Eureka County was less than 1,700, suggesting that forecast estimates are high, possibly as a result of decreased mining activity.

Table 3-4
County Population Forecasts 2000-2018

Year	Population Estimates					
	Churchill County	Eureka County	Lander County	Mineral County	Pershing County	Washoe County
2000	27,010	2,100	7,710	6,560	7,410	327,830
2005	30,470	2,180	7,980	6,420	8,570	342,000
2010	34,720	2,400	8,400	6,220	9,710	353,170
2018	43,620	2,830	9,170	6,090	11,910	381,300

Source: Nevada State Demographer's Office 1998b

Table 3-5
1996 Employment by Industry Type

Industry	Churchill County	Eureka County	Lander County	Mineral County	Pershing County	Washoe County
Farm	594	113	118	36	194	386
Agricultural Services, Forestry, Fishing, Other	0	42	10	0	0	1,838
Mining	0	4,197	1,246	411	840	982
Construction	763	305	0	70	56	15,070
Manufacturing	431	0	0	16	41	14,011
Transportation and Public Utilities	333	0	0	21	64	11,929
Wholesale Trade	318	0	66	11	19	11,863
Retail Trade	1,840	120	543	393	449	33,681
Finance, Insurance, and Real Estate	546	0	54	77	0	13,882
Services	3,429	109	509	1,578	292	84,833
Government	3,164	253	531	565	598	21,147
Total	**11,686**	**5,181**	**3,393**	**3,185**	**2,610**	**209,622**

Note: Employment in each county does not equate to population of the county.
Sources: Bureau of Economic Analysis 1998b.

service positions, and 750 contractors. Agriculture is also a component of the county's economy.

Mining, ranching, services, and agriculture are the dominant industries in Eureka, Lander, Pershing, and Mineral counties. Instability in mining and ranching has resulted in swings in employment and earnings, especially in Eureka and Pershing counties. The services sector is the largest employer in Washoe County.

3.9.3 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-income Populations. The purpose of the order is to avoid disproportionate adverse environmental, human health, or economic impacts from federal policies and actions on minority and low-income populations. The executive order requires that any significant adverse impacts of a federal project or alternatives on minority and low-income populations be reported and, where appropriate, that mitigation measures be prescribed.

Current background information on minority groups is provided in Table 3-6. Population estimates for 1998 indicate that whites make up the majority of the population of the ROI. Table 3-6 shows that the largest racial minority within the counties and municipalities in the ROI is Native American. A significant percentage of the ROI population considers itself of Hispanic origin. Pershing County had the largest population of Hispanic origin, with approximately 17.9 percent of its population in this category; and Churchill County had the lowest Hispanic population, with about 6.7 percent of the population in this category, respectively. The Fallon Paiute-Shoshone Tribe of the Fallon Reservation and Colony is located near Fallon. The colony consists of 60 acres two miles northeast of Fallon, and the reservation consists of over 8,000 acres 12 miles northeast of Fallon. The Walker River Paiute Tribe is located in southwestern Churchill County, just south of B-19.

Executive Order 13045 seeks to protect children from disproportionately incurring environmental health risks or safety risks that might arise as a result of federal policies, programs, activities, and standards. Environmental health risks and safety risks to children are those risks that are attributable to substances that a child is likely to come in contact with or ingest.

Table 3-7 presents the age distribution within the ROI counties and Fallon. The majority of the population within the ROI falls within the age group between 20 and 64 (labor force age group), and about one third of the residents of the ROI counties and Fallon are children (within the zero to 19 age group). Lander County had the highest percentage of children with 35.6 percent of its population within the zero to 19 age group, and after Washoe County, Churchill County had the highest absolute number of children, with 7,378 members of its population between the ages of zero and 19.

Relatively large concentrations of children are most likely to be present at schools within the ROI. All eight of the Churchill County School District's public educational facilities are located in Fallon, including one pre-school, five elementary schools, one junior high school, and one high school (Churchill County School District 1999). A privately operated elementary school also is located in Fallon. Eureka County has one elementary school and one junior and senior high school located in Eureka and one elementary school in Crescent Valley (Eureka County School District, Superintendent's Office. Personal Communication. May 6, 1999). In Lander County there are two schools near Austin, an elementary school in the town and a high school about two miles north of Austin on Battle Mountain Highway. There are a high school, a junior high school, and three elementary schools within the town limits of Battle Mountain (Manzini, Tammy. Personal Communication. May 7, 1999). In Mineral County one elementary and middle school is located in Shurz on the Walker River Indian Reservation, and three schools, including an elementary school, a junior high

Table 3-6
Population Racial Characteristics

Race	Churchill County (% total)	Eureka County (% total)	Lander County (% total)	Mineral County (% total)	Pershing County (% total)	Washoe County (% total)
Total	24,020	1,640	7,040	6,620	7,270	311,350
White	21,699 (90.3%)	1,576 (96.1%)	6,644 (94.4%)	5,328 (80.5%)	6,816 (93.8%)	284,207 (91.3%)
Black	337 (1.4%)	5 (0.3%)	10 (0.1%)	356 (5.4%)	19 (0.3%)	7,412 (2.4%)
Native American	1,301 (5.4%)	47 (2.9%)	368 (5.2%)	866 (13.1%)	398 (5.5%)	7,161 (2.3%)
Asian or Pacific Islander	682 (2.8%)	12 (0.7%)	18 (0.3%)	69 (1.0%)	37 (0.5%)	12,570 (4.0%)
Hispanic Origin	1,609 (6.7%)	160 (9.8%)	1,019 (14.5%)	628 (9.5%)	1,304 (17.9%)	36,091 (11.6%)

Sources: Nevada State Demographer's Office 1999b, Sierra Pacific 1999b, Eureka County Economic Development Council et al 1997.

Table 3-7
Population Age Distribution

Age	Churchill County (% total)	Eureka County (% total)	Lander County (% total)	Mineral County (% total)	Pershing County (% total)	Washoe County (% total)
0 to 19	7,378 (30.7%)	456 (27.8%)	2,503 (35.6%)	1,965 (29.7%)	2,400 (33.0%)	86,234 (27.7%)
20 to 64	13,469 (56.1%)	996 (60.7%)	4,083 (58.0%)	3,627 (54.8%)	3,967 (54.6%)	189,612 (60.9%)
65 and over	1,572 (6.5%)	187 (11.4%)	453 (6.4%)	1,029 (15.5%)	902 (12.4%)	35,504 (11.4%)
Total	24,020	1,640	7,040	6,620	7,270	311,350

Sources: Nevada State Demographer 1999b, Sierra Pacific 1999b, Eureka County Economic Development Council et al 1997.

school and a high school, are located in Hawthorne. Another elementary and middle school is located in the town of Mina (Mineral County School District, Superintendent's Office. Personal Communication. May 6, 1999).

3.10 RECREATION

Common recreational activities in the ROI include hunting and trapping fur-bearing animals, camping, hiking, horseback riding, fishing, bird watching, and operating off-highway vehicles (OHV). Additional activities, although more limited, include motorcycle and OHV racing, snow sports, boating, swimming, pine nut gathering, wood-cutting, mine and ghost town exploring, and rock, fossil, flora, and insect collecting. The Pony Express National Historic Trail runs parallel to Highway 50 within the FRTC. An annual trail ride along the Pony Express route takes place in June. The trail is part of the American Discovery Trail, a coast-to-coast hiking trail.

Most recreation occurs on BLM-administered lands. Management objectives for recreation emphasize providing for a wide range of recreational opportunities on public land.

Edwards Creek Valley. Mobile sites A, B, C, and D are outside but adjacent to the Clan Alpine WSA. Recreational activities, including OHV use, may occur in this area.

Gabbs Valley. Dispersed recreation may occur throughout the valley, but no specific recreational uses were identified near the proposed EW sites.

Smith Creek Valley. The Pony Express National Historic Trail is approximately one mile south of Mobile site A. Dispersed recreational uses, including land sailing on playas, may occur throughout the area, but no other significant recreational uses were identified in the vicinity of these sites.

Big Smoky Valley. Spencer Hot Springs is approximately 2.5 miles southeast of the closest EW site, Mobile C. The site is not visible from Spencer Hot Springs (see Section 3.7 for a discussion of visual resources). Spencer Hot Springs receives regular visitor use. Hickison Petroglyphs Recreation Area, which receives approximately 30,000 visitors annually, is located seven miles northeast of the nearest site. No other significant recreational uses were identified in this area.

EW-10. The Sand Mountain Recreation area is approximately nine miles west of the site, on the other side of the Sand Springs Range, and the Pony Express National Historic Trail parallels Highway 50, approximately two miles south of the site. Other recreational activities also may occur in the project area.

Dixie Valley. Dixie Valley is open to OHV use. Other dispersed recreational activities also occur in the project area.

TIS Sites

Dispersed recreational activities may occur but no other recreational uses were identified in the vicinity of these sites.

3.11 Grazing and Wild Horse and Burro Management

Most livestock grazing beneath the FRTC is on public lands managed by the BLM. Management objectives include maintaining sustainable grazing levels. Livestock also graze, but to a significantly lesser degree, on land north of B-16 managed by the Bureau of Reclamation and on private lands interspersed throughout the FRTC.

Under the Wild Free-Roaming Horses and Burros Act (PL 92-195) signed December 15, 1971, and later amended by Federal Land Policy and Management Act of 1976 (PL 94-579) and the Public Rangelands Improvement Act of 1978 (PL 95-514), the Secretary of the Interior is authorized and directed to protect and manage wild free roaming horses and burros as components of public lands. The BLM field offices establish management objectives for herd management areas (HMAs), which include maintaining and enhancing habitat to provide forage for a specified number of horses.

Edwards Creek Valley. EW-71 would be in the Clan Alpine grazing allotment. The proposed mobile sites would be within the Clan Alpine and Edwards Creek grazing allotments. None of the proposed EW sites in Edwards Creek Valley would be within an HMA.

Gabbs Valley. EW sites would be in the Pilot/Table Mountain grazing allotment. None of the proposed EW sites would be within an HMA.

Smith Creek Valley. EW-73 would be in the Porter Canyon grazing allotment, while the mobile sites would be within the Porter and South Smith Creek grazing allotments. Mobile sites D and E and the communications hub would be in the Desatoya HMA.

Big Smoky Valley. EW-74 and Mobile sites A and B would be in the Simpson Park grazing allotment and the Hickison HMA (burro population). Other mobile sites in Big Smoky Valley would be within the Kingston grazing allotment and would not be within an HMA.

EW-10. EW-10 would be in the Frenchman Flat grazing allotment and would not be within an HMA.

TIS Sites

TIS-37. The site would be in the Porter Canyon grazing allotment and the Desatoya Mountains HMA.

TIS-45. The site would be in the Porter Canyon grazing allotment but not within an HMA.

TIS-47. TIS-47 would be in the Potts grazing allotment and the Hickison HMA.

TIS-49. TIS-49 would be in the Buffalo Valley grazing allotment.

3.12 Air Quality

The region of influence for air quality issues varies according to the type of air pollution being discussed. Primary pollutants, such as carbon monoxide and directly emitted particulate matter, have a localized region of influence generally restricted to the immediate vicinity of the source of emissions. Secondary pollutants, such as ozone, have a broader region of influence.

3.12.1 Ambient Air Quality Standards

The federal government has established ambient air quality standards for criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine and inhalable particulate matter ($PM_{2.5}$ and PM_{10}), and lead particles. With the exception of the SO_2 standard, the Nevada Division of Environmental Protection (NDEP), Bureau of Air Quality has adopted the federal standards to regulate air pollution in the state. NDEP has adopted an SO_2 standard more stringent than the federal standards. Ambient standards for some criteria pollutants have been set for both short and long exposure episodes. Most ambient standards have been set to protect public health, while some state ambient air quality standards may be based on other considerations, such as protecting crops and materials or avoiding nuisance conditions.

3.12.2 Existing Air Quality Conditions

Areas that do not meet air quality standards are designated as nonattainment areas for the relevant pollutants. Nonattainment areas are sometimes further classified according to the degree of severity of the nonattainment status (marginal, moderate, serious, severe, or extreme). Areas where the status has changed from nonattainment to attainment are designated as maintenance areas. Areas that meet air quality standards are designated as attainment areas for the relevant pollutants. Areas of questionable status are generally designated as unclassifiable areas.

In Nevada, the Lake Tahoe area, Las Vegas area, and Reno area are nonattainment for carbon monoxide, Washoe County (Reno) and Clark County (Las Vegas) are nonattainment for PM_{10}, and Washoe County is nonattainment for ozone (40 CFR Part 81). The rest of the state, including Churchill, Mineral, Nye, Lander, Eureka, and Pershing counties, are attainment or unclassified for all of the criteria pollutants. Of the proposed projects, only changes to the Reno MOA would occur in a nonattainment area.

3.12.3 Federal Clean Air Act Conformity Process

Section 176(c) of the Clean Air Act requires federal agencies to ensure that their proposed actions are consistent with the Clean Air Act and with federally enforceable state implementation plans (SIPs) (air quality management plans). The US Environmental Protection Agency (EPA) has promulgated separate rules that establish conformity analysis procedures for transportation-related actions and for other (general) federal agency actions. The conformity review process is intended to ensure that federal agency actions will not cause or contribute to new violations of any federal ambient air quality standards; will not increase the frequency or severity of any existing violations of federal ambient air quality standards; and will not delay the timely attainment of federal ambient air quality standards.

A formal conformity determination is required for federal actions occurring in nonattainment areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. Most of the actions proposed in this EIS occur in attainment areas and are not subject to conformity requirements. Actions within the Reno MOA are within a moderate PM_{10} and a marginal ozone nonattainment area and are subject to conformity analysis. Based on the present nonattainment status of Washoe County, the project would conform to the most recent EPA-approved SIP if its annual emissions are less than 50 tons of volatile organic compounds (VOCs), 100 tons of NO_x, and 100 tons of PM_{10}. If proposed emissions exceed these thresholds, the Navy would be required to perform a formal conformity determination.

3.13 NOISE

The overall region of influence for noise issues is the area under FRTC airspace. A more localized region of influence is appropriate for discrete noise sources; such localized areas of influence are generally within one-half mile of the noise source.

3.13.1 Noise Terminology

Sound level measurements are reported using a logarithmic decibel (dB) scale. Decibel scales indicate the relative intensity of sound levels; a 10 dB increase generally is a doubling of loudness. Decibel scales that approximate the way the human ear responds to noise levels is the "A-weighted" decibel scale (dBA). Average noise exposure over a 24-hour period often is presented as a day-night average noise level (Ldn). Ldn values are calculated from 24-hour averages in which nighttime values (10 PM to 7 AM) are increased by 10 dB to account for the greater disturbance potential from nighttime noises.

Example noise levels include the following: military aircraft at 500 feet is 110 dB, heavy truck at 50 feet is 80 dB, military aircraft at 10,000 feet is 70 dB, automobile at 100 feet is 60 dB, quiet urban daytime is 50 dB, rural daytime outdoors is 40 dB, and bedroom at night is 40 dB. Relative to human receptors, noise levels under 45 dBA are considered quiet, 46 to 65 dBA are considered moderately loud, 66 to 75 dBA are considered loud, 66 to 110 dBA are considered very loud, and 111 dB and above are considered uncomfortable.

3.13.2 Existing Noise Environment

Sensitive Receptors

Land uses that are considered to be sensitive to noise are known as sensitive receptors. Sensitive noise receptors in the region of influence include residences, schools, hospitals, wildlife refuges, and wilderness areas located under FRTC airspace.

Existing Noise Conditions

Areas that fall under the airspace boundaries associated with NAS Fallon experience generally elevated Ldn noise levels. These levels range from 75 dB near the air station boundary to 60 dB in adjacent areas of Fallon, and are primarily the result of aircraft take-off and landing. Noise levels vary in and around the training ranges, from 60 dB outside the ranges to over 75 dB inside the training ranges and along flight patterns (US Navy 1992).

Near the training ranges, noise from air-to-ground gunnery cannot be detected because of higher levels of noise from aircraft involved in gunnery activity. Within B-16, only practice and training ordnance are used producing noise levels below 65 dB. Live ordnance dropped on B-17 produces 65 dB noise contours at a distance of 6.7 miles from the impact area, while the delivery of explosive ordnance on B-19 produces a 65 dB contour 5.7 miles from the impact area. These data indicate that areas outside the training ranges are experiencing noise from training activities.

Aircraft operations within the FRTC can produce prolonged periods of ambient noise. This noise level is generally not above 60 dB but may be noticeable due to the low ambient noise levels in much of the region.

NAS Fallon uses helicopters in its integrated air and ground training mission. The peak noise levels at distances of 100 and 1,000 feet from the flight track are approximately 76 dBA and 62 dBA, respectively (US Navy 1998c).

3.14 Public Safety and Hazardous Materials

The region of influence for this section includes the areas where proposed actions have the potential to adversely affect public health and safety. These actions include training-related changes at B-17, B-19, on Navy-administered lands in the Dixie Valley, and at proposed EW sites.

The greatest threat to public health and safety from NAS Fallon activities is existing unexploded ordnance. To a much lesser extent, aircraft mishaps also present hazards to public safety. Data from the Hazard Analysis Mitigation Report (US Navy 1995e), the Range Air Installation Compatibility Use Zone (RAICUZ) study (US Navy 1982), and the High Altitude Footprint Development study for F/A-18 aircraft (US Navy 1996c) are included in this section.

3.14.1 Hazard Analysis Report

The Naval Air Station Fallon Ranges Hazard Analysis Mitigation Report, September 1995, examined the effects of live and practice ordnance drops (US Navy 1998c). The HAZARD methodology was used to develop safety footprints showing the total ground area needed to contain potential off-range ordnance for that range, based on operational requirements and parameters. The analysis accounts for specific types of aircraft, types of ordnance, delivery parameters (including dive angle, release altitude, aircraft heading, and airspeed), terrain, and self-imposed operational restrictions. Range composite weapons safety footprints are developed by combining the requirements and parameters for footprints developed for specific targets on each range.

3.14.2 Off-range Ordnance

Military ordnance inadvertently has fallen outside the boundaries of the training ranges onto land historically managed by the BLM and on the Walker River Indian Reservation. Beginning in early 1989, the Navy organized sweeps of areas adjacent to the training ranges to locate off-range ordnance. All lands contaminated by off-range ordnance, except Walker River Indian Reservation lands, are closed to public access and were withdrawn under the Range Safety and Training Public Land Withdrawal EIS (US Navy 1998c).

3.14.3 Range Safety Footprint Development

The NAS Fallon RAICUZ study (US Navy 1982) identified areas contiguous to the FRTC training ranges where safety or noise considerations were found to exceed Navy guidelines for specified land uses. Maps showing noise, safety, and incompatible land use zones were presented in the RAICUZ document and are being updated for current and future aircraft types and aircraft operations.

The High Altitude Footprint Development study for F/A-18 aircraft (US Navy 1996c) provides the results of high altitude weapon safety footprint development tests for air-to-surface delivery of munitions using data gathered at B-20. Historically, the footprint database was developed to address low and medium altitude deliveries; no descriptors were available for high altitude deliveries. Due to the evolving nature of aircraft, weaponry, and tactics, it was necessary to develop new footprints to reflect changes in training. Tests were conducted using F/A-18 aircraft, which made over 300 high altitude (18,000 to 35,000 feet MSL) weapons deliveries on a scored target at B-20. No off-range ordnance was detected during this study, and the existing weapons safety footprint contained within B-20 was found to be adequate. An EA was prepared for this test, and a finding of no significant impact was issued (US Navy 1995a).

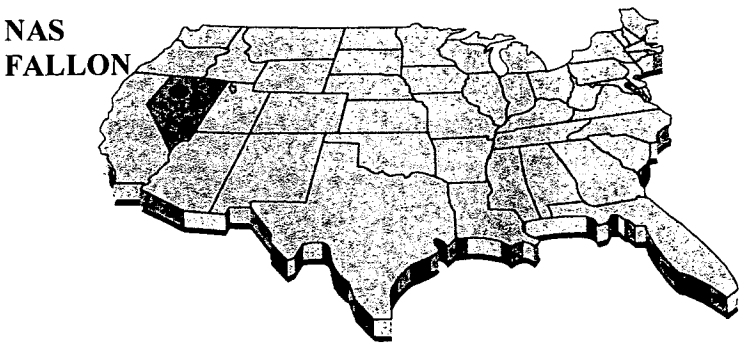
3.14.4 Electromagnetic Radiation (EMR) Hazards

EW transmitters, while in operation, emit electromagnetic radiation. Navy Hazards of Electromagnetic Radiation to Personnel (HERP) calculations for existing radars indicate that the distances over which transmissions are hazardous vary from zero up to 1,000 feet.

Standard operating procedures are used to protect Navy personnel and the public from hazards (NAVSEA OP 3565, Technical Manual for Electromagnetic Radiation Hazards; IEEE Standards or Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields). These procedures include setting the height and angle of transmission to avoid direct exposure (also required for operational purposes), posting warning signs, activating warning lights when the radars are operational, and/or securing sites with fencing. EMR from EW systems is the same type as that emitted by cell phones, hand-held radios, walkie-talkies, commercial radio, and television stations. EMR from a typical EW site averages less than 0.325 milliwatts per square centimeter; EMR from a cell phone is 1.19 milliwatts per square centimeter.

3.14.5 Hazardous Substances

Fixed EW sites have aboveground storage tanks for fuel that are used to power emergency generators. Other hazardous substances at the fixed EW sites include waste oil, lubrication oils, batteries, and small quantities of cleaning fluids (US Navy 1991b).



4.0 ENVIRONMENTAL CONSEQUENCES

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

This chapter describes the environmental consequences of the proposed action and alternatives. Potential impacts are assessed in proportion to their significance. Measures to mitigate or reduce the level of significance of each impact are provided, where applicable; in some cases, standard operating procedures to reduce the effects on the human and natural environment are built into the project description, as detailed in Section 2.3. The impact analyses are organized in order of the resource areas described in Chapter 3. Since some impacts are common to the proposed action and alternatives, only the differences are described for alternatives to the proposed action. The impact analysis is based on current training needs and scenarios. If changes in military technology and tactics require different scenarios, the Navy would comply with all appropriate regulations and environmental documentation.

4.1 LAND USE

4.1.1 Proposed Action (Four Valleys-Fixed)

Although all proposed changes in land use would occur on land administered by either the Navy or the BLM, Senate Bill 40 requires that actions on BLM land be evaluated for consistency with county policy plans for public lands. All activities considered under the proposed action would be consistent with the policies for public lands in Eureka, Churchill, Lander, Mineral, and Nye counties.

Impacts

EW Sites. No significant land use impacts would be expected from developing EW sites under the proposed action. Developing the fixed and mobile EW sites on Navy-administered lands would involve minor development, totaling approximately 22 acres, and would be consistent with current and planned military use of these lands.

Development on public lands of EW Sites 71, 72, 73, and 74, including the full expansion of EW Site 10 and the development of roads and powerlines to each of the sites, would disturb approximately 76 acres of public land. Approximately 26 of these acres would be closed to public access for the fixed EW sites. Closing this amount of land would not be significant since the proposed land area would be small and dispersed and thus would not interfere with continued multiple use management in each affected area.

TIS Sites. No significant land use impacts would be expected at TIS sites. The total developed area of all four TIS sites would be approximately 0.5 acres. Developing these sites on public land would not

conflict with multiple use management objectives of the BLM.

B-17 and B-19 Training Ranges and Use of Dixie Valley Lands. Constructing targets and ranges at B-17 and B-19, in addition to EW site developments at B-19 and B-20, and using Dixie Valley lands would not involve substantial development. Developing these facilities would not constitute a change in land use and would be consistent with the current and planned military training purpose of the ranges. Proposed alterations to the target complexes would also require analysis of weapons footprints (OPNAVINST 3550.1 RAICUZ) to ensure compatibility with land use on and around the ranges (see Section 4.14, Public Safety and Hazardous Materials). No significant impacts to land use would occur.

Fiber Optic Cable Route. Most of the fiber optic cable route would be on existing withdrawn lands or within or adjacent to existing rights-of-way. Installing the cable within these rights-of-way would be consistent with existing land uses. The four-mile cable route between Highway 95 and B-16 would be outside existing rights-of-way. No incompatible uses exist along this area, and rights-of-way granted would be consistent with the resource management objectives of the BLM. There would be no significant land use impacts.

Reconfiguration of Special Use Airspace, Hellfire Missile Training, and High Altitude Weapons Delivery Training. Reconfiguring special use airspace, Hellfire missile training, and high altitude bombing would have no effect on land uses. Potential indirect effects on sensitive land uses from noise are discussed in Section 4.13, Noise.

Mitigation Measures

No mitigation measures would be required.

4.1.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

The overall impact to land use under Alternative I would be less than under the proposed action. The total disturbed area of public land would be approximately 68 acres, including roads and powerlines, due to the reduction in size of the fixed sites and the limited expansion of EW Site 10. Over 12 acres would be closed to public use. The location of mobile sites on or near existing roadways and disturbed areas would minimize the potential impacts to adjacent lands. None of the proposed EW sites would be incompatible with surrounding land uses or would conflict with multiple use management objectives of the BLM.

Mitigation Measures

No mitigation measures would be required.

4.1.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Land use impacts under Alternative II would be less than under Alternative I and the proposed action. Elimination of the two fixed sites in Smith Creek and Big Smoky valleys would reduce the total disturbed area on public lands to approximately 34 acres, including roads and powerlines. Under 12 acres would be closed to public access. Similar to Alternative I, the potential land use impacts from dispersed mobile sites would be minimized by locating these sites near existing roads or disturbed areas. None of the proposed EW sites would be incompatible with surrounding land uses or conflict with multiple use management objectives of the BLM.

Mitigation Measures

No mitigation measures would be required.

4.1.4 Alternative III (Four Valleys-All Mobile)

Impacts

Land use impacts under Alternative III would be less than those under the proposed action or other alternatives since developing only mobile EW sites under this alternative would reduce the disturbed public land area to approximately 12 acres. Approximately four acres for the expanded EW site would be closed to public access. None of the proposed EW sites would be incompatible with surrounding land uses or would conflict with multiple use management objectives of the BLM.

Mitigation Measures

No mitigation measures would be required.

4.1.5 No Action Alternative

Impacts

No new land use impacts would occur under the No Action Alternative. Land uses would continue under the current management and use scenarios.

Mitigation Measures

No mitigation measures would be required.

4.2 AIRSPACE USE

4.2.1 Proposed Action (Four Valleys-Fixed)

Impacts

EW and TIS Site Development. In general, flight patterns would not change from the present situation as a result of developing and operating EW sites under the proposed action or alternatives (current flight patterns are depicted on Figure 3-1). The reason for this is that computers currently simulate threats at the places proposed for actual ground placement of new EW sites. Computer simulations provide incomplete training for several reasons when compared to the actual placement of equipment on the ground. First, not all aircraft can use simulations, because only the newest F/A-18 aircraft have sensors that allow the aircraft to electronically "see" or be "pulsed" by the computer-simulated radar signal. Second, there is no feedback to the aircraft so that if the plane is picked up by the computer-generated radar, there is no way for the plane to escape. Third, computer simulations do not provide training for the intelligence community, such as allowing personnel to evaluate and exploit information about enemy systems on the ground obtained from unpiloted aerial vehicles.

While flight distribution patterns would not change from developing additional EW sites, tactical considerations would result in aircraft flying at higher elevations to avoid the ground threats that these sites simulate; however, flight levels of military aircraft are limited to the ceilings of the existing special use airspace. The ceilings of the MOAs and restricted areas would not change under the proposed action, with the exception of restricted area airspace above B-17 and B-20, discussed below. Because the airspace over most of the new EW sites would not change, no impacts to commercial or civil aviation would result from operating these sites. New TIS sites would have beneficial effects by increasing the Navy's ability to track aircraft in areas that currently have poor coverage and by providing better pilot accountability.

The use of ground sites would not result in an increase in low-level flight training (200 to 500 feet above ground level). These flights currently make up approximately 12 percent of all training flights; low-level flights may decrease in the future as training requirements change to meet real world threat conditions. The EW site proposed for the B-19 training range would not result in increased flights over or near the Walker River Paiute Tribe due to airspace altitude restrictions.

Fiber Optic Cable/Utilization of Dixie Valley Lands. Developing fiber optic cable routes and using Dixie Valley lands for training would have no impact on airspace or airspace use.

B-17 and B-19 Target Developments and Training. Developing and using new targets on the B-17 and B-19 training ranges would not substantially alter

flight patterns; therefore, there would be no significant airspace impacts.

Special Use Airspace and Hellfire Missile Training. Disestablishing R-4802 and absorbing this area in R-4813 would eliminate the unnecessary designation of a restricted area that is already encompassed within a larger, existing restricted area. The administrative elimination of this restricted area designation would have no impact on airspace use by either military or civil aircraft operations in the region. Designating and using the one restricted area (R-4813) would simplify Naval Strike and Air Warfare Center (NSAWC) scheduling processes and accountability of special use airspace use reporting to the FAA for the B-20 complex.

Changing the times of use of the Reno MOA and air traffic control assigned airspace (ATCAA) to support NSAWC training requirements would have no significant impacts on airspace use in the region. Anticipated operations would not exceed recent past levels (700 sorties) by the Nevada Air National Guard in this MOA. Flights between NAS Fallon/FRTC and the Reno MOA would be on instrument flight rules (IFR) flight plans and would be separated from any IFR traffic on any federal airways/jet routes.

The proposal to establish and align new restricted areas R-4804B and R-4813B over the existing restricted airspace up to 35,000 feet mean sea level (MSL), or flight level (FL) 350, would ensure that required protected airspace could be scheduled and used to support Navy mission requirements for high altitude flight and ordnance delivery training. The higher-altitude restricted areas would have no impact on civil visual flight rules (VFR) aircraft operations since under FAA regulations they are limited to flight below 18,000 feet MSL (FL180) and are not permitted to enter restricted airspace when it is in use. This action would not affect availability of the VFR corridor that provides access to general aviation aircraft through the northern portion of R-4804. This action also would have no effect on the Fallon Municipal Airport or other airfield operations in the region.

Establishing and aligning new restricted areas R-4804B and R-4813B up to 35,000 feet MSL (FL350) would not have a significant impact on commercial aviation. FAA is the final real time approval authority for all airspace, including authorizing military use of additional restricted airspace over B-17 and B-20. The Navy currently requests from FAA the use of ATCAAs that exceed the vertical limits of the proposed restricted area airspace above B-17 and B-20. The frequency of these airspace requests would remain the same under the proposed action, including the vertical increases in proposed restricted area airspace. The impact to commercial airline traffic would not be significant since flight safety would continue under the control of respective Air Traffic Control centers that provide advisories to aircraft that might be entering MOAs or that route air traffic around MOAs (including restricted airspace). Air traffic other than that scheduled and FAA-approved military aircraft are not allowed in restricted area airspace concurrently with military aircraft.

Hellfire missile training and high altitude weapons delivery training would have no significant impacts since hazardous activity would be contained within existing restricted area airspace boundaries.

Mitigation Measures

No mitigation measures would be required.

4.2.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

EW Site Development. Developing smaller fixed EW sites and four or five mobile EW sites in each valley would not substantially alter flight patterns, as described under the proposed action. For this reason, Alternative I would have no significant effects on airspace or airspace use resulting from EW site development and use.

Mitigation Measures

No mitigation measures would be required.

4.2.3 Alternative II (Two Valleys—Fixed and Four Valleys-Mobile)

Impacts

EW Site Development. Developing fixed EW sites in two valleys and mobile EW sites in four valleys would not substantially alter flight patterns, as described under the proposed action. For this reason, Alternative II would have no significant effects on airspace or airspace use resulting from EW site development and use.

Mitigation Measures

No mitigation measures would be required.

4.2.4 Alternative III (Four Valleys-All Mobile)

Impacts

EW Site Development. Developing only mobile EW and communication sites in each valley would not substantially alter flight patterns, as described under the proposed action. For this reason, Alternative III would have no significant impacts on airspace or airspace use resulting from EW site development and use.

Special Use Airspace. The effects of Alternative III on airspace use in the region would be generally the same as those discussed for the proposed action, although this alternative would require less coordination among NAS Fallon, NSAWC, and the Air Route Traffic Control Centers (ARTCCs) to control, transfer, and/or release airspace during periods of high volume air traffic or when severe weather generates a large number of en route course deviations.

Mitigation Measures

No mitigation measures would be required.

4.2.5 No Action Alternative

Impacts

TIS Site Development. The No Action Alternative would have adverse effects to airspace use in that additional tracking coverage of the eastern FRTC would not be provided. However, this alternative would represent no change to airspace or airspace use.

Special Use Airspace. Under this alternative, R-4802 would not be disestablished. The administrative benefits would be lost, but this would have no impact on airspace use since this is basically an administrative action that would not affect how and where civil or military aircraft operate in the region. Scheduling, using, and reporting aircraft missions in R-4802 would continue as currently accomplished.

Taking no action would not change current flight operations in the FRTC; therefore, there would be no new impact on the local air traffic environment.

Mitigation Measures

No mitigation measures would be required.

4.3 BIOLOGICAL RESOURCES

4.3.1 Proposed Action (Four Valleys-Fixed)

Impacts

Sensitive Species and Habitat. There are no known resident threatened or endangered species within the proposed EW and TIS sites, the B-17 and B-19 training ranges, or the Dixie Valley area; therefore, no impacts are expected to resident threatened or endangered species. Bald eagles and mountain plovers may transit the sites; however, construction and operation of the proposed projects would not harm them or any of their critical habitat.

As is standard engineering design for the Navy, powerlines associated with EW sites would be constructed with a span greater than 60 inches, thereby reducing the risk of electrocution of raptors

and other avian species. Powerline poles would provide perching opportunities for raptors, possible leading to increased predation of prey species, such as sage grouse, within about a two-mile radius. However, none of the powerline corridors are located this close to sage grouse strutting areas. The closest lek is approximately four miles away from the powerline associated with EW-74. Because no sage grouse or sage grouse droppings were observed at any of the sites, and since the closest sage grouse strutting area is over four miles from one fixed EW site, no impacts are expected to sage grouse.

Two sensitive plant species were observed at the EW sites. A sand cholla was observed at EW Site 72, and a grizzly bear prickly pear cactus was observed at EW Site 73. While neither of these species is federally or state-protected, the state of Nevada considers all cacti important and provides protection for cactus species on private land through the Nevada Cactus and Yucca Law. Cacti would be avoided to the maximum extent practicable.

No sensitive habitats are known to occur within the proposed TIS sites. The mobile EW sites would be located where they would not impact any adjacent waters of the US. Where the fiber optic cable crosses canals, it would be suspended above or bored under the canals to avoid impacts to waters of the US. No dredge or fill activities would take place at B-19 or on Dixie Valley landholdings.

Nonsensitive Species and Habitats. No significant impacts to nonsensitive species and habitats would occur under the proposed action.

EW Site Development. Construction and operation of EW sites would result in adverse but not significant impacts to wildlife and vegetation. Blading and leveling the ground and adding gravel and an eight-foot fence around the 5.7-acre EW sites would remove vegetation and prevent regrowth. The vegetation that would be removed at each site is not unique and is abundant within each valley. Wildlife habitat at the site would be eliminated, and the fence would prevent passage of certain larger mammals through the site. Direct mortality may occur, such as through filling occupied burrows. Roosting areas, such as knolls, would not be affected. As is standard operating procedure, all sites would be surveyed by a biologist if construction would take place during avian breeding season, thereby ensuring that migratory birds would not be directly affected. Minor impacts would occur from human disturbance during hours of operations; however, most wildlife species would become habituated to the noise and activity.

The mobile sites on Navy-administered land in the Dixie Valley would be located adjacent to existing roads and would occupy up to one-third acre each. Roadside vegetation would be removed. Impacts to vegetation and wildlife would not be significant.

TIS Site Development. Construction impacts would be limited to installation of the equipment without any grading. No roads would be constructed because the sites would be accessed by helicopter. In addition, no powerlines would be installed. Minimal vegetation and wildlife habitat would be affected, so only minor to negligible impacts are expected.

Utilization of Dixie Valley Lands. No vegetation or wildlife habitat would be affected from development of laser targets and close air support training on Navy-administered land. Laser spotting would only adversely affect wildlife if it were aimed directly at an animal's eye. There is little known about the potential extent of this damage. As is standard operating procedure, laser use would cease if animals are detected in the target areas.

B-17 and B-19 Target Development and Training. Construction of range improvements would adversely impact nonsensitive resources from destruction of vegetation and habitat, possible contamination, or direct mortality. However, these areas contain plant and wildlife species common to the region and most of the affected lands within the ranges are already disturbed from training activities. Species likely to experience direct mortality would be

smaller mammals that have limited capabilities to escape heavy machinery, such as mice, voles, and rats. No birds are expected to be directly killed from the action due to their transitory nature. As is standard operating procedure, all sites would be surveyed by a biologist if construction would take place during avian breeding season, thereby ensuring that migratory birds would not be directly affected.

Noise generated from integrated training operations may startle wildlife. Human activity on the ground has a greater effect on wildlife than do overflights or sonic booms (US EPA 1980). These effects would be of limited duration and would have only temporary effects on wildlife. In addition, effects would be the same as under existing operations and would not be significant, because most wildlife species have habituated to the disturbance or would migrate to extensive adjacent habitat. None of these impacts are expected to be significant.

Fiber Optic Cable. Most of the fiber optic cable would be installed along existing roads. A small area of vegetation along the corridor would be disturbed during installation. This would be a negligible impact given that little vegetation would be disturbed, that most of the cable route has been previously disturbed, that the vegetation within the corridor tends to be common and abundant in the region, and that reclamation activities would be implemented as required. Fiber optic cable routes along two track roads or cross-country locations were surveyed, and no unique or sensitive species were recorded (Rathbun 1999).

Special Use Airspace, Hellfire Missile Training, and High Altitude Weapons Delivery Training. Raising the upper altitudes of restricted areas would not result in adverse impacts to biological resources. Bird-aircraft strike hazards (BASH) would not be affected because the altitudes in question are far above the altitudes at which most birds fly and at which bird strikes occur (US Navy 1999d). The results from the noise analysis (Section 4.13) indicate that noise would not increase over the restricted areas; therefore, no noise-related impacts are expected. The numbers of flights over the Reno MOA would be comparable to those when the MOA was under control of the Nevada Air National Guard, and the relatively small number of operations would not be expected to significantly affect wildlife, particularly at the established altitudes (13,000 feet MSL to 31,000 feet MSL [FL310]). The proposed action would not affect the frequency of low-level or supersonic flights in these areas and so would not increase the incidence of potential disturbance to wildlife. Hellfire missile training would not adversely affect biological resources. Hellfire missile training would occur in existing impact areas that are already highly disturbed with limited vegetation and limited opportunities for wildlife foraging. Effects from Hellfire missiles would be similar to those from ordnance that is already fired from helicopters in these areas with some frequency.

Noxious Weeds. Disturbance of vegetation may increase the spread of invasive exotic plant species but would be controlled in accordance with the BLM Integrated Weed Management Strategy (BLM 1997) and Navy policy (OPNAVINST 5090.1B). Therefore, minor to negligible impacts are anticipated.

Noise. Wildlife may be affected by noise from proposed activities, including high altitude weapons delivery training, Hellfire missile training, and generator use at EW sites. Actions on the training ranges would not produce a noticeable difference in the existing noise levels and would therefore not have any new effects to area wildlife. Generator use may produce startle effects in the area of EW sites, but this would be a temporary effect.

Mitigation Measures

Sensitive Species and Habitat. None of the proposed activities are expected to affect jurisdictional wetlands; however, prior to construction and operation of the proposed sites, the ranges and fiber optic route would be surveyed for wetlands. The Navy would obtain any permits for its activities that

are required by the Clean Water Act and the Rivers and Harbor Act.

Nonsensitive Species and Habitat. No mitigation measures would be required.

Noxious Weeds. No mitigation measures would be required.

4.3.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Impacts to biological resources from EW site development would be similar to those described for the proposed action. Impacts at EW Site 10 and at the four fixed EW sites on public lands would be less because the affected areas would be smaller. The additional 18 mobile sites on public land would be located close to existing roads and, in some instances, would be located in areas that are already disturbed. As explained for the proposed action, impacts are not considered significant.

Mitigation Measures

No additional mitigation measures would be required.

4.3.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Impacts would be the same as described under Alternative I.

Mitigation Measures

No additional mitigation measures would be required.

4.3.4 Alternative III (Four Valleys-All Mobile)

Impacts

Impacts would be the same as described under Alternative I.

Mitigation Measures

No additional mitigation measures would be required.

4.3.5 No Action Alternative

Impacts

No changes to current conditions would result from the No Action Alternative; therefore, there would be no additional impacts to biological resources.

Mitigation Measures

No mitigation measures would be required.

4.4 Geology, Soils, and Mineral Resources

4.4.1 Proposed Action (Four Valleys-Fixed)

Impacts

The potential for impacts on geologic resources from the proposed action is expected to be limited to ground disturbance in areas of construction, off-highway vehicle use, or increased intensity of training activities. Construction activities can disturb soils, which could result in increased erosion. Due to the relatively low rainfall in the desert valleys in the region, the rate of water erosion is expected to be minimal. Wind erosion could occur in sites on basin margins, where "desert pavement" or established vegetation is disturbed. (Desert pavement refers to a surface, common on alluvial deposits in desert areas, where fine materials are winnowed by wind over time, leaving behind the larger gravel and cobble-sized particles, which eventually armor the surface and prevent further wind erosion.)

No significant impacts are expected from seismic hazards or other geologic hazards. Staffed facilities include small structures that are unlikely to sustain significant damage or to cause injury to the occupants. The proposed new facilities on public lands are small (representing less than 1/100 of one percent of the public land area within the ROI), are

underlain by alluvium, and would not impede access to surrounding areas for mineral exploration.

EW Site Development. The EW sites would be on nearly flat ground on valley floors or on relatively gentle slopes of alluvial fans at the basin margins, where the potential for erosion is low to moderate. In general, the size of the disturbed areas would be so small that the amount of additional erosion that would result from construction activities is expected to be insignificant compared to natural rates of erosion in the surrounding areas. No mineral claims were identified at proposed fixed EW sites in Edwards Creek, Gabbs, Smith Creek, and Big Smoky valleys.

TIS Site Development. Minimal erosion impacts are expected at TIS sites on ridgetops due to their small size and the lack of erodable soil. The sites would be accessed by helicopter rather than by roads. No mineral claims were identified at proposed TIS sites.

B-17 and B-19 Target Development and Training. Construction and use of new targets, live mortar ranges, and associated ground support activities could result in ground disturbance and consequently could increase water and wind erosion of soils. However, the areas in which these activities would occur are already disturbed by similar activities. No mineral claims are located on the training ranges, and proposed development and training at B-19 would not affect geothermal resources.

Utilization of Dixie Valley Lands. Developing laser targets and close air support training on Navy-administered lands would have minor ground-disturbing effects, so impacts to geological resources would be minimal to negligible compared to existing conditions. No mineral claims are located on Dixie Valley landholdings.

Fiber Optic Cable. Most of the fiber optic cable would be installed alongside existing roads. The fiber optic cable would be installed by direct-burying the cable over three feet underground and covering up the trenched area after the cable was in place. The geologic impacts of this installation are not expected to be significant because of the small amount of ground surface that would be disturbed and because the disturbance would be adjacent to existing roads. No mineral claims are located in existing rights-of-way or along the routes requiring new rights-of-way grants.

Special Use Airspace, High Altitude Weapons Delivery Training, and Hellfire Missile Training. Changes to special use airspace would have no geologic impacts since ground-disturbing actions would not occur. High altitude weapons release and Hellfire missile training would not increase the footprint of the existing live impact areas on B-17 and B-20.

Mitigation Measures

No mitigation measures would be required.

4.4.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

EW Site Development. The geologic impacts of Alternative I would be similar to those described for the proposed action, except there would be a net decrease in land disturbance. No mineral claims were identified at proposed fixed EW sites in Edwards Creek, Gabbs, Smith Creek, and Big Smoky valleys. Unpatented claims are found within the same township, range, and section as Mobile site A in Gabbs Valley.

Mitigation Measures

No mitigation measures would be required.

4.4.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

EW Site Development. The geologic impacts of Alternative II would be similar to those for the proposed action. While more individual sites would be constructed for mobile EW units, fewer acres

would be disturbed, resulting in minor impacts to geological conditions. Mineral resources impacts would be the same as described for Alternative I.

Mitigation Measures

No mitigation measures would be required.

4.4.4 Alternative III (Four Valleys-All Mobile)

Impacts

EW Site Development. The total land area disturbed for site preparation on public lands at the mobile sites would be much less than for the four fixed EW sites, so the geologic impacts are expected to be less than those for the proposed action. Mineral resources impacts would be the same as described for Alternative I.

Special Use Airspace and High Altitude Weapons Delivery Training. Airspace changes would not involve ground-disturbing actions; therefor, no geologic impacts would occur.

Mitigation Measures

No mitigation measures would be required.

4.4.5 No Action Alternative

Impacts

The No Action Alternative would not result in any additional ground disturbance and therefore would not result in any geologic impacts.

Mitigation Measures

No mitigation measures would be required.

4.5 WATER RESOURCES

4.5.1 Proposed Action (Four Valleys-Fixed)

Impacts

No significant impacts to water resources would occur under the proposed action. Training activities in the Dixie Valley would avoid streams, ponds, and jurisdictional wetlands. Training activities proposed at B-19 would not disturb the fenced pond located near the western border of the range.

Special use airspace changes would not result in any change in lateral area covered and would not involve ground disturbances; therefore, there would be no impacts to water resources.

Mitigation Measures

No mitigation measures would be required.

4.5.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

No water resources are present at the proposed EW, TIS, or range development sites. As with the proposed action, no significant impacts to water resources would occur.

Mitigation Measures

No mitigation measures would be required.

4.5.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

No water resources are present at the proposed EW, TIS, or range development sites. As with the proposed action, no significant impacts to water resources would occur.

Mitigation Measures

No mitigation measures would be required.

4.5.4 Alternative III (Four Valleys-All Mobile)

Impacts

No water resources are present at the proposed EW, TIS, or range development sites. As with the proposed action, no significant impacts to water resources would occur.

Mitigation Measures

No mitigation measures would be required.

4.5.5 No Action Alternative

Impacts

Under the No Action Alternative, no new impacts to water resources are expected.

Mitigation Measures

No mitigation measures would be required.

4.6 CULTURAL RESOURCES

4.6.1 Proposed Action (Four Valleys-Fixed)

Impacts

Five archaeological sites, a ranch complex, two historic travel corridors (Pony Express Trail and Overland Freight Route), the Navy's Range Control building, and 18 canal features associated with the Newlands Project could potentially be impacted. An assessment of both physical and visual impacts was conducted. Through determinations of eligibility and concurrence with the SHPO, and project design, only two archaeological sites would be impacted. Mitigation plans, if required, would be developed in consultation with the SHPO.

Mitigation Measures

Appropriate mitigation measures, if necessary, would be prepared in consultation with the SHPO.

4.6.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Under Alternative I, impacts to cultural resources would the same as described for the proposed action.

Mitigation Measures

Mitigation measures would be the same as described for the proposed action.

4.6.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Under Alternative II, the impacts would be the same except that the two unevaluated sites are excluded from this alternative. Therefore, no mitigation plans would be necessary.

Mitigation Measures

No mitigation measures would be required.

4.6.4 Alternative III (Four Valleys-All Mobile)

Impacts

Under Alternative III, the impacts would be the same as Alternative II.

Mitigation Measures

No mitigation measures would be required.

4.6.5 No Action Alternative

Impacts

No new impacts to cultural resources would occur under the No Action Alternative.

Mitigation Measures

No mitigation measures would be required.

4.7 NATIVE AMERICAN RELIGIOUS CONCERNS

4.7.1 Proposed Action (Four Valleys-Fixed)

Impacts

Native American consultation was conducted with several of the tribes, with three tribes serving as cooperating agencies. Final proposed locations for the TIS sites has been made in consultation with the tribes. Native American consultation is complete, and based on this consultation, no further concerns have been brought forward.

Mitigation Measures

No mitigation measures would be required.

4.7.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Impacts would be the same as discussed for the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.7.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Impacts would be the same as discussed for the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.7.4 Alternative III (Four Valleys-All Mobile)

Impacts

Impacts would be the same as discussed for the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.7.5 No Action Alternative

Impacts

Under the No Action Alternative, no new impacts are expected.

Mitigation Measures

No mitigation measures would be required.

4.8 VISUAL RESOURCES

4.8.1 Proposed Action (Four Valleys—Fixed)

The potential for visual impacts from the proposed action is expected to be largely limited to areas where structures are constructed. As discussed in Section 2.3, standard operating procedures would be implemented to minimize impacts to the viewshed. Standard operating procedures include painting sites a neutral color, such as Carlsbad Canyon brown, to minimize visual contrast and installing light filters on operational warning lights at EW sites to decrease the reach of light transmission.

Impacts

All of the project sites under Battle Mountain BLM Field Office management are subject to VRM Class IV objectives, which allow for the greatest degree of modification to the landscape. Project sites under Carson City BLM Field Office management are subject to interim VRM Class III objectives, which allow for a moderate degree of modification to the landscape.

The visual analysis focuses on proposed fixed EW sites since these sites have the highest potential to alter the landscape given their size and proximity to observation points with potentially high viewer sensitivity, such as highways. Installation of fiber optic cable, development of EW sites and construction and use of new targets and live mortar ranges on the training ranges, development of laser targets and close air support training on Navy-administered lands in Dixie Valley, reconfiguration of special use airspace, Hellfire missile training, and high altitude bombing would not alter the viewshed. Mobile EW sites would not alter the viewshed when unoccupied. When in use, these sites would provide a moderate degree of visual contrast that is consistent with VRM Class III and Class IV management objectives. Development of TIS sites would introduce small structures near ridgelines, but given their placement in Class III and IV rated lands and the distance to key observation points (KOPs), visual contrast would be weak. Visual contrast rating worksheets are included in Appendix H.

EW-71. Developing EW-71 in Edwards Creek Valley would have a moderate visual contrast with the surrounding landscape. The KOP is defined as a point on Highway 50 approximately three miles southwest of EW-71 where it would enter the line of sight of an eastbound traveler (Figure C-1); the site

would stay in view for approximately three minutes. Vertical elements of the site, such as the radar towers and chain-link fence, would contrast with the flat, barren valley floor and lack of other cultural modifications and may attract viewer attention. The 0.1-mile powerline to the site would be parallel to the view angle from the KOP and would be partially sheltered from view by the existing powerline. The vast expanses of the valley and mountains in the foreground-middleground and background would continue to dominate views in the valley. Developing EW-71 would be compatible with the management objectives for Class III rated lands, and there would be no significant impacts to visual resources.

EW-72. Developing EW-72 in Gabbs Valley would have a moderate visual contrast with the surrounding landscape. The KOP is defined as a point along Scheelite Mine Road approximately three miles northwest of EW-72 where it would enter the line of sight of a southbound traveler (Figure C-3); the site would remain in view for over three minutes. The site elements would contrast with the flat, barren valley floor and lack of other human modifications, but the vast expansive views of the valley and mountains from the KOP would continue to dominate. The powerline to the site would be visible but would not dominate the viewshed as it would be partially screened by the existing powerline. Developing EW-72 would be compatible with the management objectives for Class III rated lands, and there would be no significant impact to visual resources.

EW-73. Constructing EW-73 in Smith Creek Valley would have a moderate visual contrast with the surrounding landscape. The KOP is defined at Railroad Pass along State Route 722, approximately four miles southeast of EW-73 (Figure C-5). As viewed from this pass, the site could remain in view for over five minutes. While the structural features of the site would visually contrast with the barren valley floor and lack of other human features, the expansive views of the valley and the surrounding mountains would continue to visually dominate. The powerline to the site would contribute to the visual contrast since it would run for almost three miles; however, it would be nearly parallel and over two miles north of State Route 722. Development of EW-73 would be compatible with the management objectives for Class IV rated lands. No significant impacts to visual resources would be expected.

EW-74. Development of EW-74 in Big Smoky Valley would have a moderate visual contrast with the surrounding landscape. The KOP is defined as a point along Highway 50 approximately three miles southwest of EW-74 (Figure C-7); the site would remain in view of a traveler for over three minutes. EW-74 would moderately contrast with the flat desert floor of the valley but would not dominate the view from the KOP. The powerline to the site would contribute to the overall visual contrast from the KOP on Highway 50 since it would closely parallel Highway 50 for almost 2.5 miles. Development of EW-74 would be compatible with the management objectives for Class IV rated lands, and no significant impacts to visual resources would be expected.

Mitigation Measures

No mitigation measures would be required.

4.8.2 Alternative I (Four Valleys—Fixed and Mobile)

Impacts

Fixed EW Site Development. Impacts to visual resources from development of fixed EW sites under Alternative I would be comparable to the proposed action. Reduction in the size of fixed sites from 5.7 acres to 3 acres may achieve a slight reduction in visual contrast for KOPs further removed from the sites, but visual contrast from KOPs along roads on the valley floor would not be noticeably altered by the size reduction. The visual effect of powerlines to these sites would be the same as under the proposed action. Development of the fixed sites would still be consistent with management objectives for Class III and IV rated areas, and a less than significant impact to visual resources would result.

Mobile EW Site Development. Mobile sites proposed under Alternative I would have a weak visual contrast with the surrounding lands. The visual contrast of these sites would be weak due to the limited modifications required for the mobile sites. These sites would contrast little with the flat, barren valley floors and would be seldom–seen because of topography and vegetation. Mobile sites adjacent to roadways would be immediately visible but the gradual transition between the site and the roadway would weaken the visual effect. Visual contrast at mobile sites largely would occur when the sites are being used and mobile EW equipment is present. Given the rate of occupancy, impacts to visual resources would not be significant. Development of mobile sites would be consistent with management objectives for Class III and IV rated areas.

Mitigation Measures

No mitigation measures would be required.

4.8.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

EW Site Development. Development of fixed EW sites in only two valleys would result in fewer visual impacts than under the proposed action or Alternative I. Fixed sites in Edwards Creek and Gabbs valleys and mobile sites in all four valleys would be developed in the same locations as under Alternative I and would have a similar visual contrast with the surrounding area. Development of communication hubs in Smith Creek and Big Smoky valleys would have less visual effect than the fixed EW sites under the proposed action and Alternative I. Visual contrast with the surrounding landscape would be weak and compatible with management objectives for Class IV lands. No significant impact to visual resources would occur.

Mitigation Measures

No mitigation measures would be required.

4.8.4 Alternative III (Four Valleys-All Mobile)

Impacts

EW Site Development. Development of only mobile EW sites on public land would have no significant effect on visual resources. Elimination of fixed sites under the proposed action, Alternative I, and Alternative II would substantially lessen the potential effect on visual resources. Potential visual impacts from development of the mobile sites would be comparable to that of Alternatives I and II. The visual contrast with the surrounding landscape would be weak and would be consistent with management objectives for Class III and IV lands.

Mitigation Measures

No mitigation measures would be required.

4.8.5 No Action Alternative

Impacts

No new impacts to visual resources would occur.

Mitigation Measures

No mitigation measures would be required.

4.9 Environmental Justice and Socioeconomics

4.9.1 Proposed Action (Four Valleys-Fixed)

Impacts

Socioeconomic Factors. Implementation of the proposed action would slightly increase NAS Fallon procurement, thereby introducing more money to the regional economy and creating direct, indirect, and induced employment opportunities. Most of the economic benefits will be realized in Churchill County; however, given the dispersed nature of the sites, other affected counties may benefit from secondary spending. Military personnel and local contractors would conduct most of the construction. Population migration and related impacts on housing and schools are therefore not expected. The proposed action would not affect commercial airline

tax received by counties under airspace used by NAS Fallon.

The location of up to 10 personnel and their families to Lander County to staff the Big Smoky Valley and Smith Creek Valley EW sites would represent a population change of less than one percent. If all employees and their families lived in Austin, the town would experience a growth of about four percent. This would increase the demand for schooling, public services, and housing in the Austin area; however, these increases would not be beyond the capacity of these facilities and service providers. In addition, expenditures within the local economy by the additional residents would increase the circulation of money in the local economy and could stimulate direct, indirect, and induced employment opportunities.

Environmental Justice. Impacts to members of Walker River Paiute Tribe and the Fallon Paiute-Shoshone Tribe of the Fallon Reservation and Colony were examined, given the proximity of these lands to B-17 and B-19. Likewise, impacts to the Pyramid Lake Paiute Tribe were evaluated given the location of its reservation under the Reno MOA and to the Yomba Shoshone Tribe and the Shoshone community given their location under the eastern portion of the FRTC. This alternative would have no disproportionately high or adverse effect on the health or economic opportunities of these groups because the action does not alter the socioeconomic or environmental conditions of Native Americans. No increase in flight operations would occur throughout the FRTC, and no developments would be conducted on lands valued for religious or utilitarian purposes by Native Americans. Operation of EW and TIS sites would not disproportionately affect the health or economic opportunities of minority populations or low-income populations since they would not be sited near these communities. All segments of the population would be equally affected from aircraft overflights.

Mitigation Measures

No mitigation measures would be required.

4.9.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Socioeconomic Factors. The socioeconomic effects of implementing Alternative I would be similar to those described under the proposed action but of lesser magnitude. The same number of personnel are assumed to relocate to Lander County under Alternative I, resulting in the same economic effects. The location of mobile units in leased or purchased yards would provide a minor beneficial economic stimulus to Austin.

Environmental Justice. As discussed for the proposed action, Alternative I would have no adverse environmental justice impacts.

Mitigation Measures

No mitigation measures would be required.

4.9.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Socioeconomic Factors. Socioeconomic impacts would be similar to those described for the proposed action but of a lesser magnitude. Because no fixed EW sites would be developed in Big Smoky Valley and Smith Creek Valley, fewer personnel would relocate to Lander County (up to five instead of 10). The social and economic effects of expenditures within the local economy by the additional residents under the proposed action would be less under Alternative II. The location of mobile units in leased or purchased yards would provide a minor beneficial economic stimulus to Austin.

Environmental Justice. As discussed for the proposed action, Alternative I would have no adverse environmental justice impacts.

Mitigation Measures

No mitigation measures would be required.

4.9.4 Alternative III (Four Valleys-All Mobile)

Impacts

Socioeconomic Factors. Socioeconomic impacts would be similar to those described for Alternative II.

Environmental Justice. Alternative III would have no adverse environmental justice impacts.

Mitigation Measures

No mitigation measures would be required.

4.9.5 No Action Alternative

Impacts

Implementing the No Action Alternative would have no significant impacts. Minority and low-income populations would not be disproportionately impacted by this alternative. All segments of the population are expected to be affected equally.

Mitigation Measures

No mitigation measures would be required.

4.10 RECREATION

4.10.1 Proposed Action (Four Valleys—Fixed)

Impacts

Development and use of EW-73 in Smith Creek Valley would not affect the Pony Express National Historic Trail. The trail itself is not within the developed area or right-of-way of any of the proposed EW sites, and access along the trail would not be prevented at any time. For major organized events, use of EW sites nearest the trail may be avoided if coordinated in advance with NAS Fallon and if no conflicts in training would result.

Development of EW-74 in Big Smoky Valley would be approximately six miles from Spencer Hot Springs and approximately seven miles from the Hickison Petroglyphs Recreation Area. This site would be sufficiently removed from either location and would not affect recreational use of either location.

Mitigation Measures

No mitigation measures would be required.

4.10.2 Alternative I (Four Valleys—Fixed and Mobile)

Impacts

Impacts under Alternative I would be comparable to those discussed under the proposed action. Three mobile sites in Edwards Creek Valley are adjacent to the Clan Alpine WSA but are along a developed roadway and would not degrade recreational use of the WSA. Mobile sites in Big Smoky Valley would be at least 2.5 miles from Spencer Hot Springs and at least 9.5 miles from the Hickison Petroglyphs Recreation Area and would not affect recreational use at either site.

Mitigation Measures

No mitigation would be required.

4.10.3 Alternative II (Two Valleys—Fixed and Four Valleys—Mobile)

Impacts

Impacts to recreational resources under Alternative II would be similar to those described under Alternative I.

Mitigation Measures

No mitigation measures would be required.

4.10.4 Alternative III (Four Valleys—All Mobile)

Impacts

Impacts to recreational resources under Alternative III would be comparable to those described under Alternative I.

Mitigation Measures

No mitigation measures would be required.

4.10.5 No Action Alternative

Impacts

No change to recreational uses would occur under the No Action Alternative, and there would be no new impacts.

Mitigation Measures

No mitigation measures would be required.

4.11 GRAZING AND WILD HORSE AND BURRO MANAGEMENT

4.11.1 Proposed Action (Four Valleys—Fixed)

Impacts

No impacts to grazing or wild horse and burro management would result from the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.11.2 Alternative I (Four Valleys—Fixed and Mobile)

Impacts

No impacts to grazing or wild horse and burro management would result under Alternative I.

Mitigation Measures

No mitigation measures would be required.

4.11.3 Alternative II (Two Valleys—Fixed and Four Valleys—Mobile)

Impacts

No impacts to grazing or wild horse and burro management would result under Alternative II.

Mitigation Measures

No mitigation measures would be required.

4.11.4 Alternative III (Four Valleys—All Mobile)

Impacts

No impacts to grazing or wild horse and burro management would result under Alternative III.

Mitigation Measures

No mitigation measures would be required.

4.11.5 No Action Alternative

Impacts

Under the No Action Alternative, grazing and wild horse and burro management would continue as under current conditions.

Mitigation Measures

No mitigation measures would be required.

4.12 AIR QUALITY

4.12.1 Proposed Action (Four Valleys-Fixed)

The primary air emission sources under the proposed action would be construction-related emissions and fugitive dust from ground-disturbing training operations. The proposed action would not result in increases in aircraft operations. All proposed emission-generating actions occur within attainment/unclassified areas for the regulated criteria pollutants. Changing times of use of the Reno MOA, which overlies Washoe County, would occur in an area that is nonattainment for ozone and PM_{10}.

Impacts

Construction-related Emissions. A temporary impact would result from fugitive dust and vehicle emissions during equipment installation activities. Site preparation for new facilities, utility extensions and improvements, and roadway reconstruction would be the most significant emission-generating activities. Construction activities would occur intermittently, in geographically separate locations, and in some cases over an extended period of time, with budgetary conditions having a significant influence on the

extent and timing of construction activities. No construction would occur in nonattainment areas, and impacts would not be significant.

Operation-related Emissions. Implementation of training requirements would not result in significant impacts to air quality. Under the proposed action, emissions associated with EW sites would include back-up generator emissions, vehicle exhaust from employee vehicles, and fugitive dust generation from vehicle travel on unpaved roads that access some of the EW sites. These emissions would be distributed over five valleys and two training ranges. Other emissions include fugitive dust from use of the new live mortar range at B-17 and new targets at B-17 and B-19; these emissions would be concentrated within the existing training range boundaries. Operation of TIS sites would not generate emissions except for helicopter flights during maintenance of the sites. Use of fiber optic cable would have no associated emissions. The proposed action would not directly result in or indirectly cause an increase in aircraft operations.

Special Use Airspace-related Emissions. No significant air quality impacts would result from special use airspace-related actions. Airspace actions would not increase the number of flight operations or substantially alter existing flight patterns. The increased altitude available under the new restricted areas also would result in the dispersion of emissions released from current flight activity over a larger vertical distance, which would minimize the ground level impact of these emissions. Changing the times of use of the Reno MOA would not affect the air quality. Because there would be no net increase in air emissions from changing the use times of the Reno MOA, no formal Clean Air Act conformity determination is required. The record of nonapplicability for this action is included as Appendix D.

Mitigation Measures

No mitigation measures would be required.

4.12.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Under Alternative I, no significant air quality impacts would occur. Less land area would be disturbed during construction of EW sites under this alternative, and operation of EW sites would result in slightly higher emissions when compared to the proposed action. Four smaller fixed EW sites would be augmented with 18 mobile sites, requiring more generator use and more vehicle travel on more unimproved roads while the sites are being used. The same effects would result from changing use times of the Reno MOA as those described for the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.12.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Under Alternative II, no significant air quality impacts would occur. Just over half the land area would be disturbed during construction of EW sites under this alternative when compared to the proposed action, and operation of EW sites would result in slightly higher emissions when compared to the proposed action. The same effects would result from changing use times of the Reno MOA as those described for the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.12.4 Alternative III (Four Valleys-All Mobile)

Impacts

Under Alternative III, no significant air quality impacts would occur. One-third the land area would be disturbed during construction of EW sites under this alternative when compared to the proposed action, and operation of EW sites would result in

slightly higher emissions when compared to the proposed action.

Under Alternative III, the upper limit of the two restricted areas would be lowered from 35,000 feet MSL (FL350) to 30,000 feet MSL (FL300) when compared to the proposed action. As discussed for the proposed action, this action would have no adverse effect on air quality, but rather would disperse the current emissions over a larger vertical distance. The record of nonapplicability for this action is included as Appendix D.

Mitigation Measures

No mitigation measures would be required.

4.12.5 No Action Alternative

Impacts

No new impacts to air quality would result from the No Action Alternative.

Mitigation Measures

No mitigation measures would be required.

4.13 NOISE

4.13.1 Proposed Action (Four Valleys-Fixed)

The primary sources of noise under the proposed action would be construction activities related to site development and training operations at these sites. No increase in the number of flight operations would result from the proposed action.

Impacts

Construction Noise. No significant noise impacts would result from construction of EW sites, TIS sites, fiber optic cable, and targets. Construction could result in noise levels over 80 dBA in the immediate vicinity of the site, with noise levels decreasing with increased distance from the site.

As there are few sensitive receptors adjacent to or near any of the proposed construction sites, noise levels around the construction zones generally would be compatible with surrounding land uses. EW sites are located in remote valleys and TIS sites are located on remote hilltops. Construction of these sites would have only minor adverse effects on wildlife and on users of public land. Noise from target development at B-17 would not be noticeable outside the training range boundaries. In general, construction noise would be intermittent, temporary in nature, and staged over an extended period of time. The proposed helicopter gunnery range at B-19, which is north of the Walker River Indian Reservation, would use the existing live impact area and would not require construction.

Operational Noise. Implementation of training requirements would not result in significant noise impacts. Under the proposed action, noise-generating activities would include vehicle travel related to EW sites, use of new targets on the training ranges, close air support training on Navy-administered Dixie Valley lands, and Hellfire missile use and high altitude bombing. Operation of TIS sites would not generate noise except for helicopter flights during maintenance of the sites, and no noise would be associated with fiber optic cable.

EW Site Operations. Operation of EW equipment would not generate noise, though noise would result from backup generator use and testing and vehicle travel to fixed EW sites. These noise levels would not be significant because the activities would be dispersed and intermittent and would not occur near sensitive receptors. As discussed in Section 4.2, operation of EW sites would not result in a redistribution of flight patterns, so no changes to the existing noise environment would result from the proposed action.

Training Operations. The use of the helicopter gunnery ranges at B-17 and B-19 and live mortar ranges at B-17 would not result in significant noise impacts. Helicopter gunnery operations would result in slight increases in noise from helicopter operations and gun fire. These slight increases would not change the overall noise environment at the B-17 or B-19

training ranges; therefore, these operations would not affect adjacent land uses. No significant noise impacts to the Walker River Indian Reservation are expected since no increase in flight operations would occur as a result of the proposed action.

Hellfire missile training and high altitude bombing at the B-17 and B-20 training ranges also would not have significant noise impacts. These operations would be contained within existing airspace and training range boundaries and would generate noise that is consistent with the existing noise environment around the training ranges. Increasing the height at which weapons are released would not result in an increase in noise levels or a change in vibrations since terminal velocity of the weapons would be the same at the higher altitude release points as at the current release points. Aircraft noise from high altitude weapons delivery training would be lower than the noise from aircraft performing weapons delivery training at current lower altitudes.

Close air support training activities at Navy-administered lands in the Dixie Valley would not have significant noise impacts. Noise would result from vehicle traffic to the area and use of pyrotechnics and blank ammunition during training, but noise levels would be minor, and there are no sensitive receptors in the area.

Special Use Airspace. The proposed action would not result in an increase in sorties over R-4804 and R-4813, which are above B-17 and B-20, respectively; therefore, no significant noise impacts would result from establishing these restricted areas. Noise levels would be lessened in these areas since some operations would take place at higher altitudes; however, few sensitive receptors are located near these areas.

Adjusting the hours of operation of the Reno MOA from 10:00 AM to 6:00 PM, Tuesday through Saturday, to 8:00 AM to 6:00 PM, Monday through Friday, would not result in significant noise impacts. All operations would continue to take place during the daytime, and impacts to weekend recreational users of Pyramid Lake would be lessened since overflights would occur most regularly on Monday through Friday rather than on Saturday. The portion of the Pyramid Lake Indian Reservation that is overlapped by the MOA is unpopulated, so no adverse noise impacts are expected in this area.

Mitigation Measures

No mitigation measures would be required.

4.13.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Under Alternative I, effects from construction and operation of EW sites would be slightly greater than the proposed action since more sites would be developed. Noise levels would be about 80 dBA in the immediate vicinity of construction activity. At a distance of 1,000 feet, noise levels would be about 55 dBA, which is similar to volume of normal speech. Construction noise would be localized and temporary. All mobile EW sites would have a generator that would run intermittently during periods of operations. Noise levels would be similar to those from generators found in recreational vehicles or used on construction sites; noise effects would be temporary and localized.

Mitigation Measures

No mitigation measures would be required.

4.13.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Under Alternative II, effects from construction and operation of EW sites would be slightly greater than the proposed action and the same as Alternative I since more sites would be developed, and generators would be used at mobile sites.

Mitigation Measures

No mitigation measures would be required.

4.13.4 Alternative III (Four Valleys-All Mobile)

Impacts

EW Sites. Under Alternative III, effects from construction and operation of EW sites would be slightly greater than the proposed action and the same as the other alternatives since more sites would be developed, and generators would be used at mobile sites.

Special Use Airspace. Noise impacts would be comparable to those of the proposed action since the only difference would be to lower the ceiling of R-4804 and R-4813 from 35,000 feet MSL (FL350) to 30,000 feet MSL (FL300).

Mitigation Measures

No mitigation measures would be required.

4.13.5 No Action Alternative

Impacts

No new noise impacts would occur under the No Action Alternative.

Mitigation Measures

No mitigation measures would be required.

4.14 Public Safety and Hazardous Materials

4.14.1 Proposed Action (Four Valleys-Fixed)

No impacts to public safety would result from construction or operation of fiber optic cable. Potential impacts from implementation of other elements of the proposed action are discussed below.

Impacts

Operation of EW sites has the potential to result in releases of hazardous materials. Implementing the standard operating procedures outlined in Section 2.3 would limit the potential for such an occurrence. High altitude weapons delivery training and Hellfire missile training may result in slight increases in ordnance expended on the training ranges. Because ordnance would be released in existing target impact areas and because this is an allowed use of the training ranges, no new impacts from use of ordnance would occur.

EW Site Development. EW site development would not result in significant impacts to public safety. EW transmitters, while in operation, emit electromagnetic radiation (EMR); emissions cease once the radar is turned off. As discussed in Section 3.14, particular hazards that may exist at the proposed EW sites would depend upon the equipment configurations at each site. Navy Hazards of Electromagnetic Radiation to Personnel (HERP) calculations for existing radars indicate that the distances over which transmissions are hazardous vary from zero up to 1,000 feet.

EW sites would be located in remote areas on valley floors. None of the sites, including sites along existing roads, would expose Navy personnel or the public to hazardous levels of EMR. In addition, none of the sites would be located next to an elevated feature such that it would be possible to expose the public to direct exposure.

No hazards to the public would occur at ground level near EW sites. EMR from EW systems is the same type as that emitted by cell phones, hand-held radios, walkie-talkies, commercial radio, and TV stations.

TIS Site Development. Development of four TIS sites would have a beneficial impact to public safety. These sites would enable NAS Fallon to improve their ability to track aircraft in areas that now have incomplete coverage. Increased coverage would provide better aircraft accountability, increased ability to evaluate the combat effectiveness of training, and increased safety from the ability to identify participating aircraft throughout the FRTC.

B-17 and B-19 Target Development. No impacts to public safety would result under the proposed action. Training would be contained within the training range boundaries and would not expose the public to hazardous conditions.

Utilization of Dixie Valley Lands. Training activities proposed on Navy-administered lands in the Dixie Valley include laser spot marking. Figure 2-6 shows the location of the existing observation tower from which the lasers would be fired; four of the targets are within the same Navy-administered land area as the tower, and two targets are located across a county dirt road that receives minimal vehicle traffic.

Laser marking would not have significant impacts to public health and safety under the proposed action. It is Navy policy to identify and control laser radiation hazards as a matter of military necessity. Various certification programs and Navy instructions are in place to prevent harm to the human and natural environment from laser use. These include Space and Air Warfare Instruction (SPAWARINST) 5100.12B (1994), Navy Laser Hazards Control Program, and Military Handbook (MIL-HDBK) 828a (1998), Laser Range Safety. SPAWARINST 5100.12B governs the design, use, and disposal of all equipment and systems capable of producing laser radiation. MIL-HDBK-828a provides uniform guidance in evaluations for the safe use of military lasers and laser systems on Department of Defense military reservations or military-controlled areas worldwide.

All proposed laser use areas undergo a command review to ensure safety of personnel and the public. Prior to use of a proposed laser area, a certified laser system safety officer surveys the area to ensure compliance with all applicable rules and regulations governing laser use. The procedures developed for an area are reviewed annually, and the area is resurveyed every three years to ensure the area remains in compliance.

As shown in Figure 2-6, the hazard zone for the lasers proposed to be used is contained within the Navy-administered parcel of land. As is standard operating procedure, laser spotting would be authorized only when there were no vehicles, people, or animals visible in the vicinity of the spotting tower and target locations. The absence of vehicles, people, or animals would be determined by a trained on-site safety officer stationed on the observation tower; the height of the tower and the character of the surrounding terrain provide for long-range visibility of the surrounding area. If vehicles, people, or animals were observed, the safety officer would call a ceasefire until the area was clear. As is also standard operating procedures, lasers would not be used under conditions that could reflect the beams, such as in the presence of standing water or snow.

Hellfire Missile Training. Release of Hellfire missiles would occur no less than 150 feet above ground level over the B-17 and B-20 training ranges and would take place within restricted area airspace. Restrictions on Hellfire missile training would be implemented to ensure that the missiles fired are contained within the designated impact areas on the training ranges, resulting in an extremely low probability that the missiles would land off range.

High Altitude Weapons Delivery Training. High altitude weapons delivery training at B-17 and B-20 would have no significant impacts to public safety. HAZARD footprints modeled for the B-17 and B-20 training ranges show that the footprints would be contained within the range boundaries. (The HAZARD methodology develops safety footprints showing the total ground area needed to contain potential live and practice/inert ordnance on the training ranges based on operational requirements and parameters.) For B-20, the model determined that one run-in line to one target had to be modified; no modifications were required for B-17. The modeled footprints are confirmed by test releases performed at B-17 and B-20 that showed ordnance released during high altitude deliveries were confined within the training ranges boundaries.

In addition, ordnance releases are monitored to ensure that ordnance remains within the training ranges; should ordnance fall off-range, it would be removed immediately and the training operation reviewed to determine the reason it fell off-range. If the Navy determines that the ordnance fell off-range

under allowable operational conditions (i.e., not due to pilot error), additional restrictions would be enacted to prevent similar future incidents.

Special Use Airspace. No increase in aircraft mishaps over R-4804, R-4813, or the Reno MOA would result from the proposed action since the number of flight operations would not change.

Mitigation Measures

No mitigation measures would be required.

4.14.2 Alternative I (Four Valleys-Fixed and Mobile)

Impacts

Alternative I would increase the number of EW sites developed on public land in relation to the proposed action. In addition to four fixed sites, the Navy would develop 18 mobile EW sites in the eastern valleys. As discussed under the proposed action, this action would have no impacts to public health and safety.

Mitigation Measures

No mitigation measures would be required.

4.14.3 Alternative II (Two Valleys-Fixed and Four Valleys-Mobile)

Impacts

Alternative II would increase the number of mobile EW sites and decrease the number of fixed EW sites developed on public land in relation to the proposed action and Alternative I. As discussed under the proposed action, this action would have no impacts to public health and safety.

Mitigation Measures

No mitigation measures would be required.

4.14.4 Alternative III (Four Valleys-All Mobile)

Impacts

In relation to the proposed action, Alternative III would eliminate fixed EW sites and use only mobile EW sites. As discussed under the proposed action, this action would have no impacts to public health and safety.

Decreasing the ceiling of the new restricted areas and associated high altitude bombing would not have significant impacts to public health and safety for the reasons detailed under the proposed action.

Mitigation Measures

No mitigation measures would be required.

4.14.5 No Action Alternative

Impacts

No change from current operations would result under the No Action Alternative; therefore, no impacts to public health and safety would occur. Not installing TIS sites in the eastern portion of the FRTC would not provide the safety benefits related to better tracking capabilities.

Mitigation Measures

No mitigation measures would be required.

4.15 Summary of Adverse Impacts and Mitigations

Implementation of the proposed action or any of the action alternatives would not result in any significant unavoidable adverse impacts. Minor adverse impacts to land use, biological resources, cultural resources, geology and soils, visual resources, recreation, air quality, and noise would result from implementation of the proposed action and action alternatives. As discussed in Section 2.3, standard operating procedures would be implemented to minimize these effects.

Potential physical and visual impacts to historic properties could result from the development of the EW sites, the communication hubs, or the fiber optic cable. Through determinations of eligibility and concurrence with the SHPO, and project design, only two archaeological sites would be impacted if the proposed action were selected. These two archaeological must be evaluated for their eligibility

to the NRHP. If eligible, adverse impacts could be avoided by project redesign, and if avoidance was not practical, mitigation plans, if required, would be developed in consultation with the SHPO.

No impacts to airspace, water resources, public safety, or grazing were identified. Beneficial impacts from developing additional TIS sites would result by increasing the Navy's ability to track aircraft in areas that currently have poor coverage and by providing better pilot accountability.

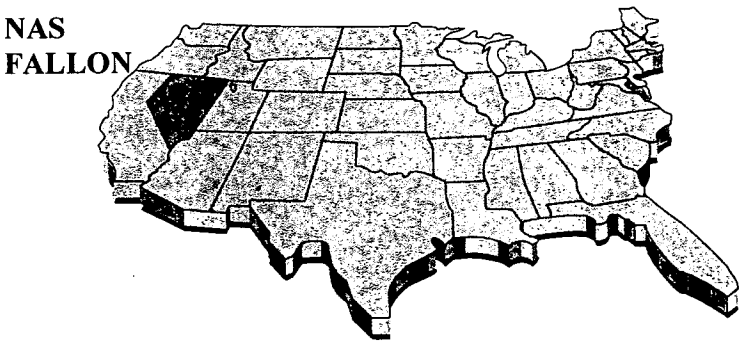
4.16 Irreversible and Irretrievable Commitment of Resources

NEPA requires that an EIS analyze irreversible or irretrievable commitments of resources (40 CFR 1502.16).

Actions on public lands would not have any direct irreversible or irretrievable commitment of resources. None of the actions proposed would permanently alter the lands disturbed, since sites could be restored were the Navy to relinquish the rights-of-way for the sites. Actions on Navy training ranges would not have any increased irreversible or irretrievable commitment of resources. Military training range lands were irreversibly committed to military training over 50 years ago when bombing commenced. While development of these lands for Navy use would result in additional ground disturbance, the landscape is already highly disturbed and contaminated with military ordnance. Increased operations would not change the magnitude of this commitment of resources.

4.17 Short-term Benefits Versus Long-term Productivity

NEPA requires that an EIS consider the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity (40 CFR 1502.16). Increased training opportunities would have short-term benefits to military training, while proposed actions do not preclude future use of public lands.



5.0 CUMULATIVE IMPACTS

CHAPTER 5
CUMULATIVE IMPACTS

5.1 INTRODUCTION

The Council on Environmental Quality (CEQ) regulations state that the cumulative impact analysis of an environmental impact statement (EIS) should include the anticipated impacts to the environment resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time" (40 CFR 1508.7).

This analysis considers the effects of the proposed action, as evaluated in detail in Chapter 4, when combined with the effects of other past, present, and future actions in the affected region. Cumulative actions evaluated in this section include proposed land actions and use of those lands, proposed airspace actions and use of that airspace, and other reasonably foreseeable future actions.

5.2 PROPOSED AND REASONABLY FORESEEABLE CUMULATIVE ACTIONS

This section presents proposed and reasonably foreseeable actions at NAS Fallon and by other Department of Defense (DOD) and Department of Energy (DOE) entities.

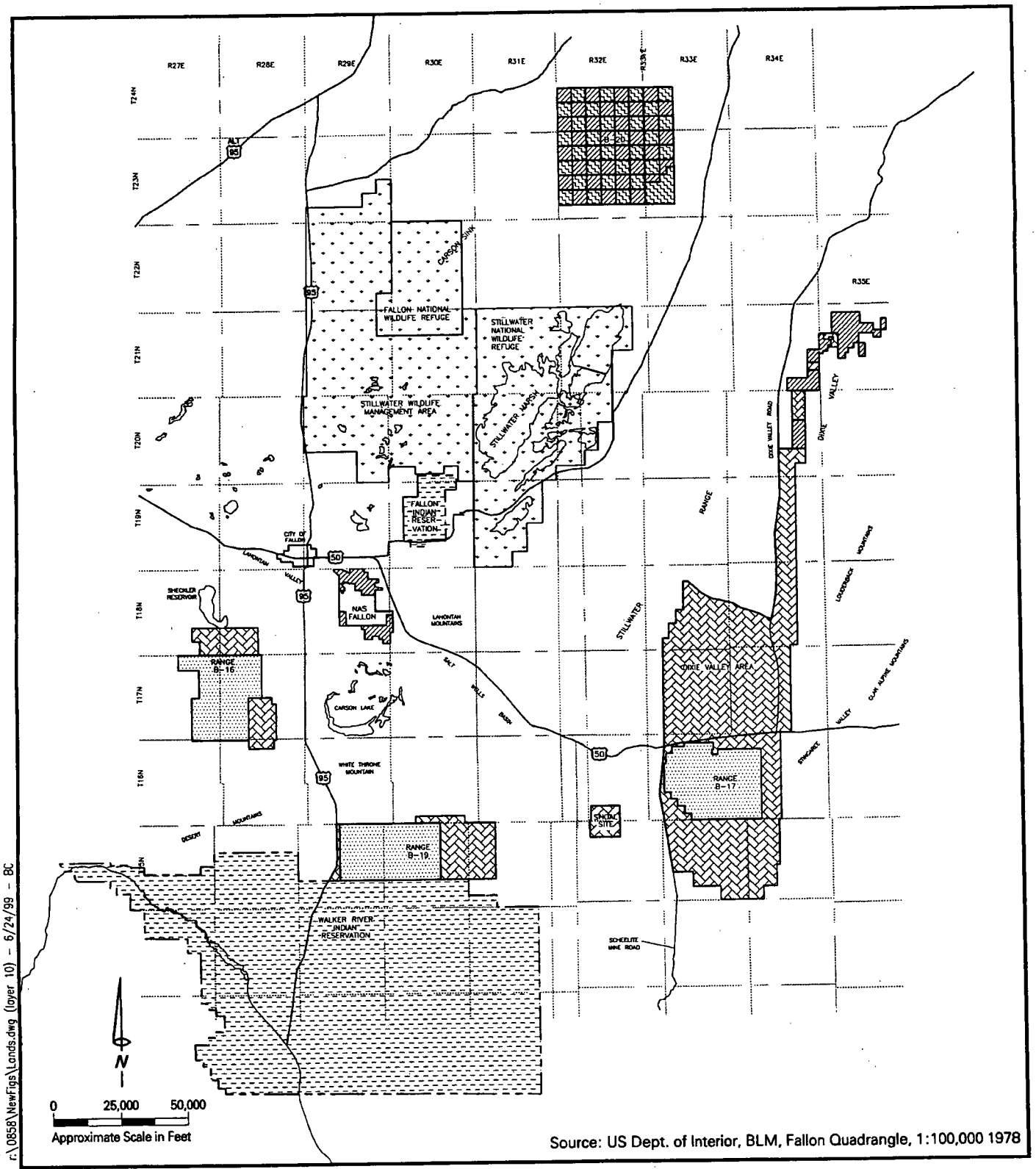
5.2.1 Description of Proposed and Reasonably Foreseeable Actions at NAS Fallon and the FRTC

Proposed Land Withdrawals and Recently Approved Land Use Actions

The following actions are proposed or recently approved at NAS Fallon and the FRTC:

- ***Range Safety and Training Public Land Withdrawal.*** The Navy recently withdrew 127,365 acres of public land around the B-16, B-17, and B-19 training ranges, in the Dixie Valley, and at a DOE shoal site west of B-17 (Figure 5-1). The environmental effects of this action were evaluated in the Range Safety and Training Public Land Withdrawal EIS, which was finalized in November 1998 (US Navy 1998c). The withdrawal was enacted on October 4, 1999.

- ***Renewal of B-20 Withdrawn Lands.*** Approximately 21,576 acres of withdrawn lands at B-20 were proposed for renewal under the EIS for the Renewal of the B-20 Land Withdrawal at NAS Fallon, Nevada (US Navy 1999a). The renewal was finalized by legislation enacted October 4, 1999.



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Source: US Dept. of Interior, BLM, Fallon Quadrangle, 1:100,000 1978

The EIS for the Renewal of Withdrawn Lands at B-20 and the Range Safety and Training Public Lands Withdrawal are awaiting congressional action.

Legend

- Training Ranges (Withdrawn Land Under PLO 898)
- Proposed withdrawal lands under the Range Safety and Training Public Land Withdrawal EIS
- Withdrawn lands under PL 99-606 subject to renewal
- Navy-owned lands
- Wildlife Area
- Indian reservation

Proposed NAS Fallon Withdrawn Lands

NAS Fallon, Nevada

Figure 5-1

- ***B-17 Target Development.*** The Navy recently developed additional targets at B-17 to allow for more diverse training and additional close air support training capabilities. These actions were approved in categorical exclusions prepared by NAS Fallon (US Navy 1998d, 1998f).

- ***B-19 Target Development.*** The Navy proposed to develop three ground training ranges on B-19 to support the sea-air-land (SEAL) unit assigned to NAS Fallon and deploying units of Special Warfare Group One that train at NAS Fallon (Figure 5-2). These actions were approved in categorical exclusions prepared by NAS Fallon (US Navy 1998d, 1999b).

- ***B-16 Airspace Designation and Disestablishment.*** The Navy recently changed flight patterns around B-16 from northern ingress to southern ingress to reduce noise and eliminate safety concerns. Modifying the flight patterns necessitated restructuring airspace over and south of B-16. The net effect of the airspace restructuring was to decrease designated airspace at B-16 by approximately 112 square miles. This action was implemented on May 20, 1999.

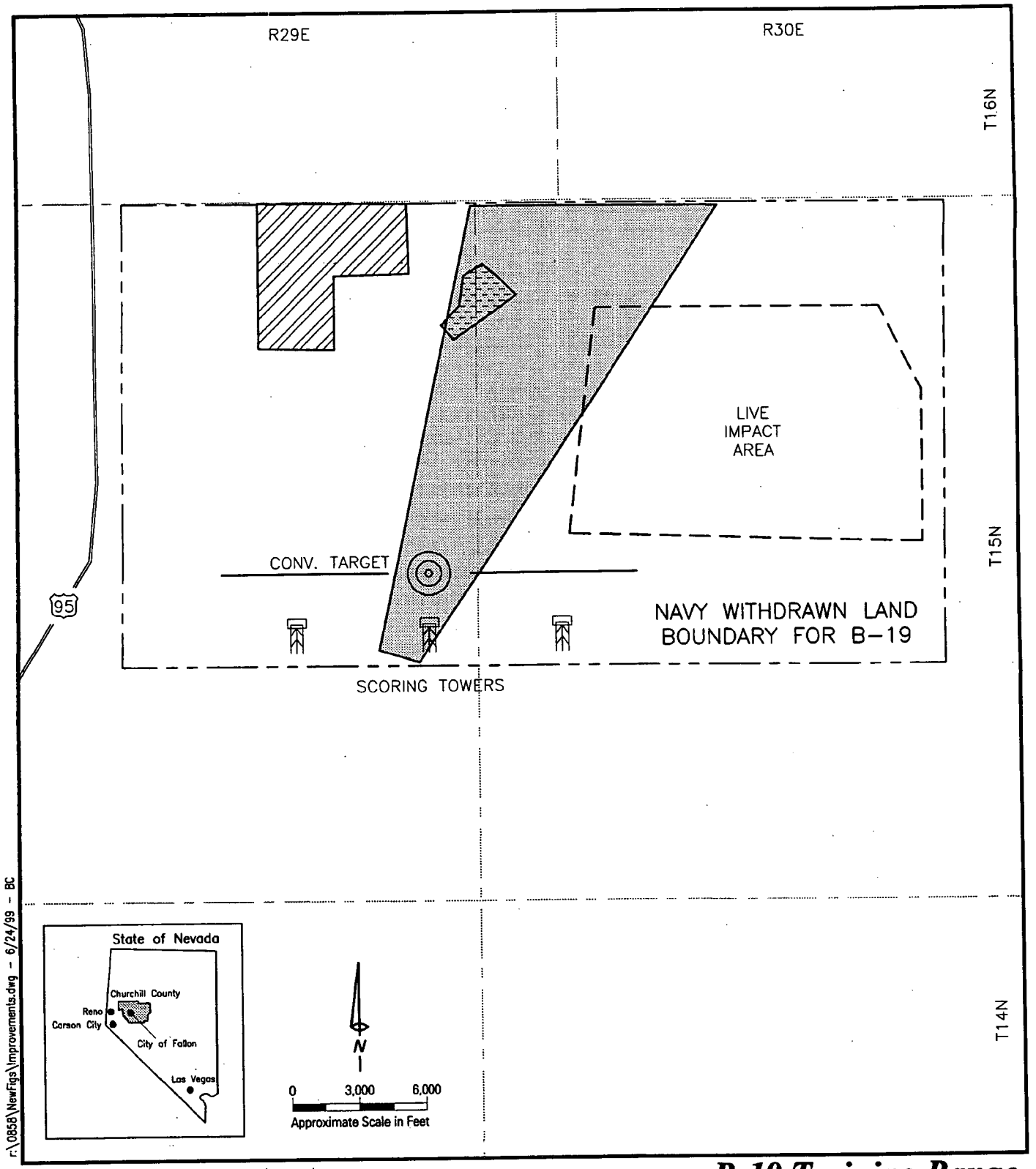
Reasonably Foreseeable Land Use Actions

The following actions are reasonably foreseeable at NAS Fallon. Appropriate environmental documentation would be prepared for each action.

- ***Joint Tactical Combat Training System (JTCTS).*** JTCTS is the successor to the tactical aircrew combat training system (TACTS). JTCTS is scheduled for installation beginning in 2005 and is anticipated to be fully operational by 2007. JTCTS will be collocated with some TIS sites during the first two years of implementation. Sites modified to accommodate JTCTS would be expanded from 16-feet by 16-feet to 35-feet by 35-feet. Since JTCTS is based on global positioning system (GPS) technology, implementing JTCTS is expected to reduce the number of ground-based TIS sites required to provide tracking within the FRTC. These surplus TIS sites would be restored and returned to BLM management.

- ***Establishment of Mobile EW Radar Sites in Additional Eastern and Northern Valleys.*** NAS Fallon has a foreseeable need to develop mobile EW site capabilities in additional eastern and northern valleys around the FRTC (IDA 1999). Developing these sites would allow aircrews to fly through defended airspace at farther distances from the air station and training ranges and would provide increased flexibility in developing training scenarios. Mobile EW sites would be identified and developed similar to the mobile EW sites proposed in Chapter 2 and evaluated in Chapter 4 of this EIS. Development of additional mobile EW sites likely would result in an overall decrease in occupancy rate of all mobile EW sites within the FRTC.

- ***B-20 Tactical Target Development and Data Transmission.*** The Navy proposes to develop a tactical target range at B-20 similar to the tactical target range at B-17. Existing targets would be modified and expanded and new targets, such as mock factories for weapons of mass destruction, would be added to create realistic target complexes. Because B-20 is in a low-lying playa subject to flooding, extensive earthwork would be necessary to provide an elevated base for roads, targets, and buildings. Fill material would be obtained off-site and would be trucked onto B-20. Development of a tactical target complex likely would result in a shift in aircraft activity away from B-17 and toward B-20, though the overall number of aircraft operations from training would not increase. The Navy would provide improved data transmission capabilities at B-20 by running fiber optic cable from the air



Legend

- SEALS Small Arms/Sniper Range
- SEALS Rocket Range
- Small Arms Range

B-19 Training Range Improvements

NAS Fallon, Nevada

Figure 5-2

Source: NAS Fallon

station to B-20 or by updating microwave repeater equipment.

5.2.2 Description of Other Proposed and Reasonably Foreseeable Actions

Four actions by other federal agencies were identified for inclusion in the cumulative impacts analysis.

- ***Expansion of Stillwater National Wildlife Refuge (NWR).*** The US Fish and Wildlife Service (USFWS) is proposing to expand the Stillwater NWR to within one mile of the B-20 training range. The Draft EIS for this action is under preparation. Should this action be implemented, the Navy would develop a memorandum of agreement with USFWS stating that the Navy would continue to use restricted area airspace over B-20 (R-4813), as it currently does, that the boundaries of the restricted area airspace would continue to extend to the ground, and that the 3,000 foot AGL restriction over the Stillwater NWR would continue to apply per the 1987 memorandum of understanding.

- ***Yucca Mountain Proposed Nuclear Repository.*** The DOE is evaluating the feasibility of developing a disposal facility for high-level radioactive materials and spent nuclear fuel at Yucca Mountain in Nye County; DOE anticipates making a recommendation on the suitability of the Yucca Mountain site for this purpose to the president in 2001. If suitable, and following Nuclear Regulatory Commission review and approval, construction of the site could be completed by 2010. The notice of intent for this action was published on August 7, 1995. As part of this action, one transportation alternative is to develop a rail line through the Crescent Valley to transport nuclear material to the Yucca Mountain facility. A proposed rail line would be within the region of the FRTC.

- ***Multiple Use Activities on Federal Lands.*** The BLM manages public lands for multiple uses, consisting of past, current, and future actions. Mining and livestock grazing continue to be dominant land uses in the region. Other notable uses include off-highway vehicle (OHV) use, recreation, and wildlife management. Such actions are anticipated to continue into the future and could consist of new developments.

- ***Renewal of Withdrawn Lands at Nellis Air Force Range.*** The Department of the Air Force is proposing to extend the withdrawal of approximately three million acres of public land for the Nellis Air Force Range (NAFR) for an indefinite period with congressional review every 15 years. The Air Force would not renew up to 35,000 acres in the Clarkdale and Wagner mining districts and along the western border of the range; these lands would be subject to BLM management. In addition, the management of lands withdrawn by the Air Force but used by another agency would be transferred to the using agency. The final EIS evaluating this action was published in March 1999 and is awaiting congressional action. This action is not within the FRTC area but is assessed for any regional impacts.

5.3 CUMULATIVE IMPACTS

Impacts of the proposed action and alternatives presented in this EIS are assessed for cumulative impacts with other actions conducted in the region. Unless otherwise specified, the region of influence for analysis is the area below the FRTC airspace.

5.3.1 Land Use

Existing federal land withdrawals conform to applicable planning laws and policies. Military activities generally are compatible with the uses on surrounding federally managed lands; off-range ordnance lands associated with NAS Fallon that are not compatible with public uses have been withdrawn as proposed under the range safety and training public land withdrawal EIS. Approximately 125,000 acres, or 1.9 percent of lands within the FRTC, are now closed to public access. The

proposed action and alternatives would close up to 45 additional acres to public access, representing a change of less than 0.001 percent.

The proposed range safety and training public land withdrawal has resulted in land being removed from the public domain and transferred to the Navy; however, much of this land has remained open to public access. Proposals to renew existing withdrawals would represent a continuation of current conditions. Returning some NAFR withdrawn lands to the public domain and adjusting administration of lands would have no significant land use impacts. Implementation of the proposed action or alternatives in conjunction with other proposed or reasonably foreseeable actions would not have an adverse cumulative impact on land use.

5.3.2 Airspace

Military activity has resulted in the establishment of special use airspace associated with military training operations in the region of influence, affecting civil aviation. The proposed action and alternatives would not result in adverse cumulative impacts to airspace or commercial or civil aviation. In addition to the proposed action, the only other major action in the region that involves airspace is the designation and disestablishment of airspace at B-16. This action resulted in a net decrease in airspace coverage and benefited general aviation by reducing restricted airspace and facilitating approaches to Reno, Fallon, and Silver Springs airports.

5.3.3 Biological Resources

Habitat on lands within the region of influence have been affected by construction and military activities, and wildlife have been affected by noise from aircraft overflights and ordnance detonation. Continued use of the lands may further degrade habitat conditions as new areas are disturbed, resulting in effects similar to those currently resulting from military operations. Implementation of the proposed action and alternatives would have no net change on impacts to biological resources. The change in flight patterns at B-16 has reduced noise levels near Sheckler Reservoir, thereby benefiting waterfowl and bald eagle habitat. The boundary revisions being considered for the Stillwater NWR also would benefit biological resources. Continued use of NAFR could benefit biological resources by protecting these resources from urbanization (US Air Force 1999). No adverse cumulative impacts to biological resources would occur.

5.3.4 Geology, Soils, and Mineral Resources

Military actions within the region of influence have resulted in impacts to soils from compaction and wind erosion. Establishment of additional military sites, such as EW and TIS sites and range developments, would have further minor effects on soils; these effects would not be cumulatively significant. Construction of a tactical target complex on the B-20 training range would require extensive earth-moving activities, including importing soil and crushed rock, potentially requiring the development of a borrow pit. Development of B-20 could have adverse localized impacts but likely would not be cumulatively significant given the undeveloped nature of the area.

Lands withdrawn in Nevada for defense-related purposes could contain mineral deposits, geothermal reservoirs, and oil and gas. Most of the defense-related withdrawals are deemed either unfavorable or marginally favorable for oil and gas. The proposed action and alternatives would not have cumulatively adverse impacts to mineral resources given the small amount of land involved. Returning portions of two mining districts to the public domain by NAFR would benefit mining.

5.3.5 Water Resources

Surface-disturbing activities on lands within the region of influence likely have increased sedimentation in some surface water resources; however, there is no indication that significant cumulative impacts to surface water resources have occurred as a result of military use. Ground water resources within the region of influence are not expected to be significantly affected by continued

military and DOE activities. Ground water contamination has been identified at some DOD sites, and remediation programs have been adopted to mitigate effects. Monitoring and hazardous material and waste management policies have been implemented to prevent future actions that could contaminate ground water. The proposed action and alternatives would not place any restrictions on the development of water sources and would not contribute to adverse cumulative effects to water resources.

5.3.6 Cultural Resources

Past defense-related activities have affected cultural resources in the region of influence. The Air Force, Navy, and DOE have adopted or are developing cultural resource management plans to minimize future impacts. Inadvertent losses still may occur from military uses; however, significant historical and archaeological resources are not expected to be affected. Proposed NAS Fallon actions on federal lands would not contribute to significant adverse cumulative effects on cultural resources, since applicable laws and regulations provide for these resources to be avoided, for project effects to be mitigated, for preservation, and for interpretation.

5.3.7 Native American Religious Concerns

Concerns have been expressed by Native American groups and individuals regarding the placement of equipment on mountain tops. A number of peaks in the region of influence are locations for Navy and civilian communication sites. Placement of additional sites could constitute a cumulative effect on Native American traditional/religious concerns. However, through tribal consultation with several tribes serving as cooperating agencies, no concerns were expressed regarding the final placement of the TIS sites under the proposed action or any of the alternatives. Total numbers of TIS sites could be a cumulative effect in the future, but visual impacts and other mountain top locations would be more of a concern to the tribes, which could be a cumulative effect.

5.3.8 Visual Resources

Most lands withdrawn and used by DOD and DOE are remote and similar in topography and scenic quality with surrounding federally administered lands. Land-disturbing activities, such as ordnance detonation, have affected the visual qualities by creating unnatural features. Continued use of these areas may result in additional alterations to the viewshed. In addition, development of communication sites have introduced manmade features in some otherwise undisturbed areas. Construction and use of new sites under the proposed action would further alter the viewshed, particularly in areas with no prior military development. The gradual development of new sites and temporary occupation of mobile EW sites would limit the extent of the effect. The effects of existing and proposed developments would not be cumulatively significant because of the homogeneity of visual features within the viewsheds and because there are few sensitive receptors, such as highways, homes, and high-use recreation areas, near these lands.

5.3.9 Environmental Justice and Socioeconomics

Defense-related activities in Nevada are projected to contribute approximately four percent of the total state gross regional product and two percent of the state employment (US Navy 1999a). Continued military use would benefit state and local economies, especially in rural areas where fewer employment opportunities exist. The primary economic trade-off of DOD and DOE activities is the land use restrictions placed on withdrawn lands, which prevent or limit agriculture, grazing, mining, and recreation. The economic value of these foregone opportunities likely would not exceed current contributions to the state economy from the DOD and DOE.

Environmental justice concerns have been raised by rural communities subject to noise from military operations. Income levels and minority population numbers in these areas do not demonstrate a

disproportionate impact upon minority or low-income populations; however, the military has worked to reduce noise levels over populated areas wherever possible and to expedite damage claims.

5.3.10 Recreation

Public access is generally restricted on most DOD and DOE lands within the region of influence. Approximately 125,000 acres of land within the FRTC are restricted to public use, representing about 1.9 percent of the total land area. Implementation of the proposed action or the action alternatives would restrict up to 26 acres, representing less than one one-thousandth of one percent of the total area. Therefore, the proposed action and alternatives are expected to have a minimal cumulative effect on recreational opportunities or quality. Additionally, these lands do not contain recreational opportunities that cannot be found on nearby public lands. Developing additional TIS sites near mountain peaks could change the "wild" characteristic of previously undisturbed areas, but would not limit access or recreational opportunities. Returning some NAFR lands to the public domain could have minor recreational benefits, as would the boundary revisions being considered for the Stillwater National Wildlife Refuge.

5.3.11 Grazing and Wild Horse and Burro Management

None of the reasonably foreseeable actions would likely change livestock grazing patterns. Military and DOE withdrawals of public lands have restricted and will continue to restrict some lands from potential livestock grazing and agricultural opportunities. While this has resulted in lost revenue from grazing and agriculture, revenue from military facilities likely exceeds foregone opportunities. The continued use of withdrawn lands would have no additional effects on existing grazing and agricultural opportunities. Returning any NAFR lands to the public domain and opening them to grazing and agriculture would have minor beneficial effects. The proposed action would not cumulatively decrease grazing opportunities or hinder the objectives of wild horse and burro management.

5.3.12 Air Quality

Based on federal and state air quality standards, source point compliance, and total emissions data as the measures of significance, air emissions from DOD and DOE activities do not result in significant regional air quality concerns (SAIC 1991). Actions occurring on public lands, along with DOD and DOE activities, release low levels of air emissions, dispersed over large and sparsely populated areas. The resulting pollutant concentrations tend to be low, with limited fluctuations in air quality. Most air quality problems in Nevada are confined to the urban areas of Reno, Lake Tahoe, and Las Vegas. Past, current, and future actions occurring within the FRTC do not contribute substantially to the federal nonattainment conditions in these areas. The proposed action and action alternatives would not substantially increase pollutant emissions in Nevada; therefore, no cumulative impacts are expected.

5.3.13 Noise

Noise associated with military activities within the region of influence results from aircraft overflights, helicopter operations, ground-based training, vehicle use, and live ordnance explosions. Other notable noise sources within the region include vehicle use, operation of industrial mining equipment, and civilian aircraft overflights. Activities on military and public lands tend to be in remote areas, generally removed from sensitive noise receptors, such as residences. However, noise from military aircraft overflights and supersonic operations have resulted in noise complaints in both urban and rural areas. As populations increase within the region of influence, the potential for noise complaints increases. The city of Fallon has adopted land use and building codes to try to reduce such incompatible land uses. Rerouting 12 military training routes to terminate at B-20 instead of B-16 (US Navy 1995b) and realigning airspace over B-16 have benefited residents near Sheckler Reservoir. Realigning some of the supersonic operating area has reduced noise and

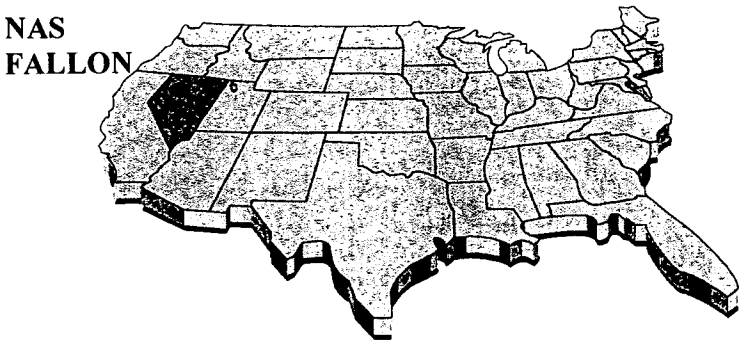
sonic booms near Austin. Implementation of the proposed action or alternatives would not cumulatively increase noise levels or duration and would result in a net decrease in noise levels in some areas, as discussed in Section 4.13.

5.3.14 Public Safety and Hazardous Materials

Past military activities in Nevada have resulted in public health and safety impacts within the region of influence, including hazards from off-range ordnance. The Navy has withdrawn areas containing off-range ordnance around the B-17 and B-19 training ranges to address existing off-range ordnance impacts on public lands and has implemented changes in operations to prevent future off-range ordnance.

The Navy expends an average of 2,786 tons of ordnance each year on the NAS Fallon training ranges; nearly 120,000 tons of ordnance have been dropped over the lifetime of the ranges. Approximately half the ordnance is expended at B-17, under a quarter is expended at each of the B-19 and B-20 training ranges, and a small percent is expended at B-16. The Navy periodically performs sweeps on the training ranges to collect surface ordnance; this ordnance is recycled and sold as scrap metal.

No public health and safety impacts result from Navy activity on the training ranges. No significant surface water features exist, and ground water in the area is of poor quality naturally and is not used as a source of drinking water. Implementation of the proposed action or action alternatives would not pose any hazards to public health and safety; therefore, no cumulative impacts are expected. Development of additional TIS sites and implementation of JTCTS would improve aircraft tracking capabilities and thereby improve public safety.



6.0 CONSULTATION AND COORDINATION AND DISTRIBUTION LIST

CHAPTER 6
CONSULTATION AND COORDINATION AND DISTRIBUTION LIST

6.1 CONSULTATION AND COORDINATION

The following people were consulted during preparation of the EIS. Scoping letters were sent to federal, state, and local agencies, organizations, and individuals soliciting input on the proposed action.

US Fish and Wildlife Service
Robert Williams

State of Nevada Department of Environmental Protection
John Walker

State of Nevada Division of State Lands
Terry Reynolds
Mike Del Grosso

State of Nevada Department of Transportation
Dennis Taylor

State of Nevada Department of Wildlife, Fallon Office
Chris Hampson

State of Nevada Office of Historic Preservation
Rebecca Palmer

Nevada State Museum
Maggie Brown

Fallon Paiute-Shoshone Tribe
Rochanne Downs
Theresa Irwin

Yomba Shoshone Tribe
Maurice Frank-Churchill
Kevin Brady Sr.
Jeremie Jackson

Walker River Paiute Tribe
Tad Williams
Thomas Burton

Eureka County
School Superintendent's Office
John Balliette (contractual manager for the county Department of Natural Resources)

Churchill County
Geof Stark

City of Fallon and Churchill County
Steve Endacott

Lander County
Tammy Manzini

Mineral County
School Superintendent's Office

6.2 DISTRIBUTION LIST

Scoping letters were mailed to the following elected officials, federal, state, and regional agency representatives, Native American representatives, organizations, and individuals. Entries denoted with an "*" indicate individuals who submitted oral or written scoping comments. Entries denoted with a "+" indicate individuals who submitted oral or written comments on the Draft EIS.

Elected Officials

	Hon	Richard	Bryan	United States Senate
	Hon	Jim	Gibbons	United States House of Representatives
	Hon	Harry	Reid	United States Senate
	Hon	Kenny	Guinn	Governor, State of Nevada
	Hon	Mike	McGinness	State of Nevada State Senate
	Hon	Marcia	De Braga	State of Nevada State Assembly
	Mr.	Lynn	Pearce	Churchill County Board of Commissioners
	Mr.	Jim	Regan	Churchill County Board of Commissioners
*+	Mr.	Pete	Goicoechea	Eureka County Board of Commissioners Humboldt County Board of Commissioners
+	Ms.	Cheryl	Lyngar	Lander County Commissioner
	Mr.	Bill	Elquist	Lander County Commissioner
	Ms.	Kathy	Jensen	Lyon County Commissioner
	Mr.	David	Ayoob	Pershing County Board of Supervisors
	Mr.	Hank	Cornu	Fallon City Council
	Mr.	Willis	Swan	Fallon City Council
	Mr.	John	Tewell	Fallon City Council
	Hon.	Ken	Tedford	Mayor of City of Fallon
	Mr.	Bob	Kelso	Fernley Town Board

Federal Agencies

	Mr.	Gene	Enstad	Federal Aviation Administration
	Navy Representative			Federal Aviation Administration
	Mr.		Warner	Federal Aviation Administration, Oakland ARTCC
	Mr.	Arnold	Bosley	Federal Aviation Administration, Salt Lake City ARTCC
	Mr.	Rodney	Dahl	Natural Resource Conservation Service
	Mr.	Robert	Hunter	US Department of the Interior, Bureau of Indian Affairs
+	Mr.	Chuck	O'Rourke	US Department of the Interior, Bureau of Indian Affairs
	Mr.	Curtis	Milsap	US Department of the Interior, Bureau of Indian Affairs, Real Property Management
	Mr.	Robert	Abbey	US Department of the Interior, Bureau of Land Management, State Office
	Mr.	Roger	Lesueur	US Department of the Interior, Bureau of Reclamation Fallon Office
	Mr.			US Department of the Interior, Bureau of Reclamation, Lahontan Basin Projects Office
+	Ms.	Patricia	Sanderson Port	US Department of the Interior, Office of the Secretary, Office of Environmental Policy and Compliance
	Mr.	Bryan	Fischer	US Department of the Interior, Indian Health Services, Office of Environmental Health
+	Mr.	Leonard	Mobley	US Department of Transportation, Federal Aviation Administration, Western-Pacific Region

Federal Agencies

+	Mr.	David	Farrel	US Environmental Protection, Agency Office of Federal Activities
				US Environmental Protection, Permits, Compliance, and Water Quality
*+	Mr.	Robert D.	Williams	US Fish and Wildlife Service, Nevada Ecological Services
	Mr.	William	Martin	US Fish and Wildlife Service, Region 9
				US Fish and Wildlife Service, Stillwater National Wildlife Refuge
				US Forest Service, Austin District
				US Forest Service, Toiyabe National Forest
				US Geological Survey, Water Resources Division

State Agencies

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	Mr.	Dean	Rhoads	State of Nevada, Committee on Natural Resources
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	Mr.	Bill	Durbin	State of Nevada, Division of Minerals
				State of Nevada, Department of Business
				State of Nevada, Department of Commerce
+	Mr.	Mike	Del Grosso	State of Nevada, Department of Conservation
				State of Nevada, Department of Education
	Ms.	Verna	Hauser	State of Nevada, Department of Health
	Ms.	Alice	Baldrica	State of Nevada, Department of Museums, Library & Arts
+	Ms.	Rebecca	Palmer	State of Nevada, Department of Museums, Library & Arts
*	Mr.	Thomas	Fronapfel	State of Nevada, Department of Transportation
	Mr.	Chris	Hampson	State of Nevada, Division of Wildlife
*	Mr.	Richard	Heap	State of Nevada, Division of Wildlife
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	Mr.	Steve	Weaver	State of Nevada, Division of Parks
	Ms.	Pam	Wilcox	State of Nevada, Division of State Lands
*	Mr.	Ed	Skudlorek	State of Nevada, Division of Water Planning
*	Mr.	Michael	Anderson	State of Nevada, Department of Water Resources
+	Mr.	Tim	Weber	State of Nevada, Department of Water Resources
	Mr.	Ray	Butler	State of Nevada, Fish & Wildlife Commission
				State of Nevada, Indian Commission
	Ms.	Dana	Bennet	State of Nevada, Legislative Counsel Bureau
				State of Nevada, Natural Heritage Program
				State of Nevada, Public Service Commission

Regional Agencies

	Mr.	Jay	Brandt	Austin Chamber of Commerce
				Battle Mountain Chamber of Commerce
	Mr.	Roger	Heath	Carson City Advisory Board to Management of Wildlife
*	Mr.	Bjorn	Selinder	Churchill County Administration Office
*	Mr.	Steve	Endacott	Churchill County Emergency Management
	Mr.	Dennis	Hellwinkle	Churchill County Farm Bureau
				Churchill County Fire Department
	Ms.	Barbara	Matthews	Churchill County Library

Regional Agencies

				Churchill County Museum and Archive
				Churchill County Road Department
			Superintendent	Churchill County School District
				Churchill County Sheriff's Office
	Ms.	Shirley	Walker	Churchill Economic Authority
	Mr.	Merlin	McColm	Elko County Conservation Association
	Mr.	William	Schaeffer	Eureka County District Attorney
+	Mr.	John	Balliette	Eureka County Natural Resources Department
	Mr.	Ken	Conley	Eureka County Planning Commission
	Mr.	Kenneth	Jones	Eureka County Sheriff's Office
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	Mr.	Ben	Hodges	Pershing County Water Conservation District
				Washoe County Board of Commissioners
	Mr.	Dan	Dragan	Washoe County Utility District
				Washoe County Water Conservation District

Native American

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				Lovelock Paiute Tribe
	Mr.	Jack	Warnecke	NLUS, Carson Council
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	Ms.	Elveda	Martinez	Walker River Paiute Tribe
	Ms.	Gypsy	Williams	Walker River Paiute Tribe
	Mr.	Thomas	Wasson	WBWS
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+	Mr.	Maurice	Frank-Churchill	Yomba Shoshone Tribe
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	Mr.	Tim	Thompson	Duckwater Shoshone Tribe
	Ms.	Marissa	Blackeye	Duckwater Shoshone Tribe
	Mr.	Elwood	Mose	Te-Moak Tribe of Western Shoshone
	Mr.	Wilber	Woods	Te-Moak Tribe of Western Shoshone
	Ms.	Helen	Dave	Te-Moak Tribe of Western Shoshone
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	Mr.	Dallas	Smales	Te-Moak Tribe of Western Shoshone
	Mr.	Nevada	Pinoli	Te-Moak Tribe of Western Shoshone
	Mr.	Larsen	Bill	Te-Moak Tribe of Western Shoshone
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	Mr.	Lee	Roberts	Shoshone-Paiute Tribes of Duck Valley
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	Mr.	Wendell R.	Alcorn	Association of Naval Aviators
	Mr.	Bob	Barnes	Audubon Society
		Jo	Dean	Audubon Society
	Mr.	Ed	Mark	Audubon Society
	Mr.	Ken	Pulver	Audubon Society
				Canvasback Gun Club
				Carson Valley Chukar Club
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	Mr.	Steve	Walker	Carson-Walker RC&D
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	Mr.	Don	Smith	Citizens For Mining
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	Mr.	Jon	Christensen	High Country News, Great Basin Region
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	Mr.	Jeff	Hoard	Kingston Village
	Ms.	Jane	Sunday	Lahontan Audubon/Wetlands Coalition
	Mr.	Nancy	Lane	Lahontan Valley Pilots Association
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	Ms.	Tina	Nappe	Lahontan Wetlands Commission
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	Mr.	Jerry	Lowery	Mule Deer Foundation
*	Mr.	Dale	Ryan	National Pony Express Association

Associations and Organizations

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				Nevada Bowhunters Association
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				Nevada Historical Society
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				Nevada Natural Resources, Education Council
	Mr.	Charles	Watson	Nevada Outdoor Recreation Association
				Nevada Outfitters & Guides Association
				Nevada Striper Club
	Mr.	Gene	Gerdes	Nevada Trappers Association
	Mr.	Hugh	Judd	Nevada Waterfowl Association
	Mr.	Ed	Wagner	Nevada Wildlife Fed; Northern Nevada
	Mr.	Ken	Hatch	Newlands Water Protection Association
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				Porter & Meissner Mining Co.
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+	Ms.	Marjorie	Sill	Sierra Club
*	Ms.	Rose	Strickland	Sierra Club, Toiyabe Chapter
	Mr.	John	Enloe	Sierra Pacific Power Company
	Mr.	H. & K.	Bennet	Silver Springs Airport
	Mr.	Bob	Brewer	Southwest Gas Corporation
				The Mule Deer Foundation
	Mr.	Lyman	McConnell	Truckee Carson Irrigation District
	Mr.	Larry	Howery	Western Range Service-Elko
	Mr.	Dennis	Miller	Virginia & Bateman
	Mr.	Clare	Mahannah	Water Research & Development, Inc.
	Mr.	George	Ball	Watersource Consulting Engineers

Universities

	Mr.	Fred	Schmidt	Colorado State University Library
				University of California Berkeley Department of Forestry
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				University of Nevada Reno Range Wildlife & Forestry Department

Libraries

Austin Branch Library
Battle Mountain Branch Library
Carson City Library
Churchill County Library
Gabbs Community Library
Round Mountain Public Library
Washoe County Library, Government Documents

Individuals

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Mr. Leonard Adelman
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+Mr. Ray Alcorn
+Mr. Jim Anderson
+Ms. Val Anderson
+Ms. Cathy Baird
Mr. Jerry Banks
Mr. Jack Barnes
Mr. Jerry Baughman
Mr. Clarence Becker
Ms. Rachel Beckwith
Mr. Dale Beebe
Mr. William Bellin
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+Mrs. Del Haas
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Mr. Dick Hunter
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Mr. Minor Kelso
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Mr. Ron Kleping
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Mr. Harry Rehkop
Mr. Roy Risi
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Mr. James Robinson
Mr. Roger E. Ryan
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Mr. Harold Schmelz
Jim and Alice Schneider
Mr. Pete Sfarrazza
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+Ms. Patricia Young
+Mr. Roland Zybell, II
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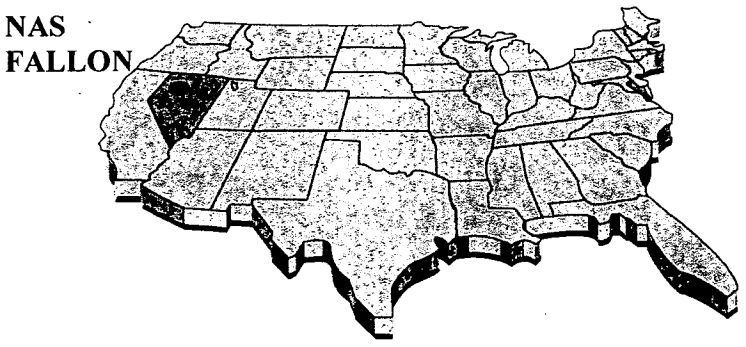

7.0 LIST OF PREPARERS

CHAPTER 7
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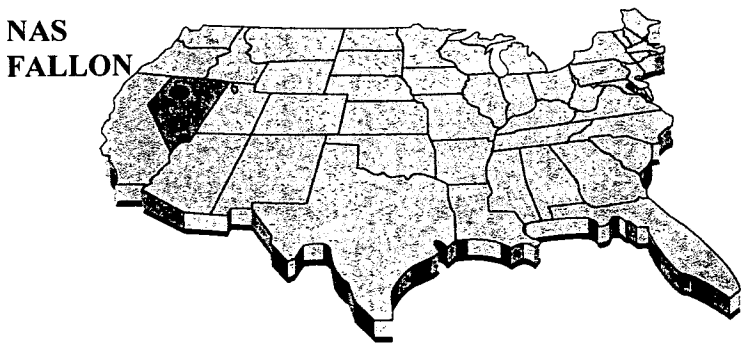

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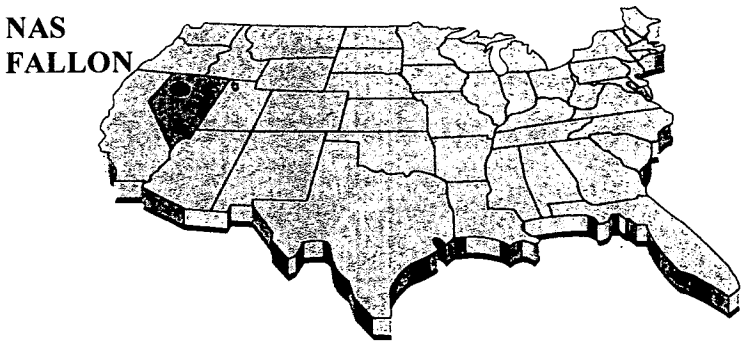


9.0 ACRONYMS AND GLOSSARY

CHAPTER 9
ACRONYMS AND GLOSSARY

Chapter 9 defines acronyms and terms used throughout the EIS to help the reader better understand Navy training, NEPA, and other technical terms.

9.1 ACRONYMS

mg/l	milligrams/per liter
µ/l	micrograms per liter
ACHP	Advisory Council on Historic Preservation
AFAF	Air Force Auxiliary Field
AFB	Air Force Base
AFT	Air Force Range
AFY	Acre-Feet Per Year
AG/LDR	Agricultural/Low Density Residential
AGL	Above Ground Level
AICUZ	Air Installation Compatible Use Zone
ALTRVs	Altitude Reservations
AR	Air Refueling Route
ARPA	Archaeological Resources Protection Act
ARTCC	Air Route Traffic Control Center
ATCAA	Air Traffic Control Assigned Airspace
AUM	Animal Unit Month
BASH	Bird Aircraft Strike Hazard
BEA	Bureau of Economic Analysis
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BOM	US Bureau of Mines
BOR	Bureau of Reclamation
BP	Before present
BRAC	Base Realignment and Closure
BOR	Bureau of Reclamation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNO	Chief of Naval Operations
CO	Carbon Monoxide
CRMP	Cultural Resources Management Plan
CVW	Carrier Air Wing
dB	decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
DNWR	Desert National Wildlife Range
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
EIS	Environmental Impact Statement
EMR	Electromagnetic Radiation
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EW	electronic warfare
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FL	Flight Level
FLPMA	Federal Land Policy Management Act
FRS	Fleet Replacement Squadrons

FRTC	Fallon Range Training Complex
FWS	Fighter Weapons School
FWW	Fighter Weapons Wing
GIMC	Geographic Index to Mining Claims
GPS	Global Positioning System
H_2S	Hydrogen Sulfide
HERP	Hazards of Electromagnetic Radiation to Personnel
HMA	Herd Management Area
HVAC	Heating, Ventilation, and Air Conditioning Equipment
HWAD	Hawthorne Army Depot
IDA	Institute for Defense Analysis
IFR	Instrument Flight Rules
IR	Instrument Routes
JTCTS	Joint Tactical Combat Training System
kW	kilowatt
KOP	key observation points
Ldn	Day-Night Average Noise Level
LEIS	Legislative EIS
Leq	Equivalent Noise Level
MCAS	Marine Corps Air Station
MIL-HDBK	Military Handbook
MOA	Military Operations Area
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTR	Military Training Route
NAAS	Naval Auxiliary Air Station
NAFR	Nellis Air Force Range
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NAWCWPNS	Naval Air Warfare Center Weapons
NBMG	Nevada Bureau of Mines and Geology
NDEP	Nevada Division of Environmental Protection
NDOW	Nevada Division of Wildlife
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NNNPS	Northern Nevada Native Plant Society
NO_2	Nitrogen Dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NOTAM	Notice to Airmen
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSAWC	Naval Strike and Air Warfare Center
NTS	Nevada Test Site
NWAS	Naval Warfare Assessment Station
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O_3	Ozone
O&M	Operations and Maintenance
OHV	Off-Highway Vehicle
OPNAVINST	Dept. of the Navy Environmental and Natural Resources Program Manual
ORV	Off-Road Vehicle
PA	Programmatic Agreement
PL	Public Law
PLO	Public Land Order
$PM_{2.5}$	Fine Particulate Matter
PM_{10}	Inhalable Particulate Matter
RAICUZ	Range Air Installation Compatibility Use Zone
RASS	Range Air Surveillance System
ROD	Record of Decision
ROI	Region of Influence
ROW	Right-of-way
R-R	Rural Resources
SAM	Surface-to-Air Missile
SEAL	Sea-Air-Land
SECNAV	Secretary of the Navy
SEL	Single Event Level
SEP	Sweep Effectiveness Probability
SHPO	State Historic Preservation Officer
SO_2	Sulfur Dioxide
SIP	State Implementation Plan
SO_x	Sulfur Oxides
SOA	A Supersonic Operations Area
SPAWARINST	Space and Air Warfare Instruction
SUA	Special Use Airspace
T&E	Test and Evaluation
TAC	Tactical Air Command

TACTS	Tactical Aircrew Combat Training System
TCID	Truckee-Carson Irrigation District
TCP	Traditional Cultural Property
TDS	Total Dissolved Solids
TFWS	Tactical Fighter Weapons Center
TIS	Tracking Instrumentation Subsystem
Top Dome	Carrier Airborne Early Warning Weapons School
TOPGUN	Naval Fighter Weapons School
TTR	Tonopah Test Range
UP	Union Pacific
US	United States
USC	United States Code
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VFC-13	Naval Reserve Squadron
VFR	Visual Flight Rules
VOC	volatile organic compounds
VORTAC	Very High-frequency Omni-directional Radio Range Tactical Aid-to-navigation
VR	Visual Routes
VRM	Visual Resource Management
WISS	Weapons Impact Scoring System
WHSRN	Western Hemispheric Shorebird Reserve Network
WSA	Wilderness Study Area

9.2 GLOSSARY

100-Year Flood Zone. Land area having a one percent chance of being flooded during a given year.

Aerial Refueling Route (AR). A route designated for aerial refueling operations. Civil aircraft can use the airspace within the AR while refueling operations are underway. Air traffic controllers provide separation for instrument flight rule traffic from military aircraft.

Aesthetics. Refers to the perception of beauty.

Air Traffic Control Assigned Airspace Area (ATCAA). An FAA-authorized airspace of defined vertical/lateral limits. ATCAAs are similar to MOAs in that they are used to accommodate aircraft maneuvering in airspace adjacent to the restricted areas and are broader and higher than the restricted areas. ATCAAs are used to give military aircraft the opportunity to fly above 18,000 feet MSL. ATCAAs are made available to FRTC air traffic only when use by FRTC will not interfere with other air traffic in that airspace. During use, civilian aircraft are routed around the ATCAA.

Altitude Reservation (ALTRV). A short-term, time-limited airspace reservation used to allow multiple aircraft (airwings) to set-up and organize outside a MOA before entering the simulated combat environment. ALTRVs extend from 18,000 to 28,000 feet MSL and are reserved only for the time the aircraft are within the ALTRV.

Ambient Air Quality Standards. Standards established on a state or federal level that define the limits for airborne concentrations of designated criteria pollutants (nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone, lead) to protect public health with an adequate margin of safety (primary standards) and public welfare, including plant and animal life, visibility, and materials (secondary standards).

Artifact. Any product or human cultural activity; more specifically, any tools, weapons, or artworks found in archaeological contexts.

Attainment Area. A region that meets National Ambient Air Quality Standards for a criteria pollutant under the Clean Air Act or that meets state air quality standards.

A-Weighted Decibel (dBA). A number representing the sound level that is frequency weighted according to a prescribed frequency response established by the American National Standards Institute (ANSI-S1.4-1971) and that accounts for the response of the human ear.

Basic Flight Training. The initial training administered to all naval aviators from the first day of flight training to the day the aviator earns his or her wings.

Battlegroup Workups. The period during which an air wing deploys aboard an aircraft carrier to operate and train with an entire battlegroup (aircraft carrier, cruisers, destroyers, frigates, and submarines).

Burial. Human remains disposed of by interment. Burials may be *simple* (containing the remains of one person) or *complex* (containing the remains of two or more individuals), *primary* (including the remains as originally interred) or *secondary* (where a reinterment follows a temporary disposal elsewhere).

Clean Air Act (CAA), 42 U.S.C. §7401 *et seq.* Legislates that air quality standards set by federal, state, and county regulatory agencies establish maximum allowable emission rates and pollutant concentrations for sources of air pollution on federal and private property. Also regulated under this law is proper removal and safe disposal of asbestos from buildings other than schools.

Clean Water Act (CWA), 33 U.S.C. §1251 *et seq.* The major federal legislation concerning improvement of the nations water resources. It provides for development of municipal and industrial wastewater treatment standards and a permitting system to control wastewater discharges to surface waters. The act contains specific provisions for regulating ships' wastewater and for disposing of dredge spoils within navigable waters. Section 404 of the act regulates disposal into waters of the United States, including wetlands.

Climate. The prevalent or characteristic meteorological conditions (and their extremes) of any given location or region.

Council On Environmental Quality (CEQ). Established by NEPA, the CEQ consists of three members appointed by the president. CEQ regulations, 40 C.F.R. §1500-1508, as of July 1, 1986, describe the process for implementing NEPA, including preparation of environmental assessments and environmental impact statements and timing and extent of public participation.

Culture. (1) The nonbiological and socially transmitted system of concepts, institutions, behavior, and materials by which a society adapts to its effective natural and human environment; (2) similar or related assemblages of approximately the same age from a single locality or district, thought to represent the activities of on social group.

Cultural History. The archaeological sequence of cultural activity through time, within a defined geographic space or relating to a particular group.

Cultural Resource. Prehistoric or historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason.

Cumulative Impacts. The combined impacts resulting from all programs occurring concurrently at a given location.

Day-Night Average Sound Level (Ldn). The 24-hour average-energy sound level expressed in decibels, with a 10 decibel penalty added to sound levels between 10:00 PM and 7:00 AM to account for increased annoyance due to noise during the night.

Decibel (dB). A unit of measure on a logarithmic scale that describes the magnitude of a particular quantity of sound pressure or power with respect to a standard reference value.

Deployment. The action of aircraft carriers going to sea for an extended period of time or the action of a carrier's aircraft unit going to an installation for training.

Developed. Said of land, a lot, a parcel, or an area that has been built on or where public services have been installed prior to residential or commercial construction.

Dialect. The variety of a language spoken by all members of a speech community; languages may include many mutually intelligible dialects.

Electronic Warfare (EW) Radar System. The equipment used to simulate the systems that detect aircraft at long range, that determine the altitude of incoming aircraft, and that provide tracking information so that a missile or other weapon can be launched against or otherwise engage a targeted aircraft.

Endangered Species. A species that is threatened with extinction throughout all or a significant portion of its range.

Endangered Species Act (ESA), 16 U.S.C. §1531 *et seq.* The ESA requires federal agencies to determine the effects of their actions on endangered species and their critical habitats.

Environmental Impact Statement (EIS). A document required of federal agencies by NEPA for major projects or legislative proposals significantly affecting the environment. A tool for decision-making, the EIS describes the positive and negative effects of the undertaking and lists alternative actions.

Ethnography. The direct anthropological study of living human groups or the study of recent, historically documented groups.

Fallon Range Training Complex (FRTC). The boundary encompassing all NAS Fallon activities. It includes the air station, four geographically separate training ranges (B-16, B-17, B-19, and B-20), three Range Air Surveillance System sites, a tracking system or tactical aircrew combat training system, a threat simulation system or electronic warfare area, and special use airspace.

Fault. A fracture in earth's crust accompanied by a displacement of one side of the fracture with respect to the other and in a direction parallel to the fracture.

Feature. A large, complex artifact or part of a site, such as a hearth, cairn, housepit, rock alignment, or activity area.

Federal Register. The government publication issued daily by the US Government Printing Office in which all federal agencies publish their regulations and legal notices.

Fleet Replacement Squadron Training (FRS). The initial training in fleet aircraft.

Flora. Plants; organisms of the plant kingdom taken collectively.

Ground Water. Water within the earth that supplies wells and springs.

HAZARD Footprint. The total ground area needed to contain potential live and practice/inert ordnance for the training ranges based on operational requirements and parameters. The analysis accounts for specific types of aircraft, types of ordnance, delivery parameters (including dive angle, release altitude, aircraft heading, and airspeed), terrain, and self-imposed operational restrictions.

Hazardous Material. A substance or mixture of substances that poses a substantial present or potential risk to human health or the environment. Any substance designated by the EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if it is otherwise released into the environment.

Hazardous Waste. A waste or combination of wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may

either cause or significantly contribute to an increase in mortality or in serious irreversible illness; or a waste or combination of wastes that may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Regulated under RCRA.

Historic. A period after the advent of written history dating to the time of first Euro-American contact in an area. Also refers to items primarily of Euro-American manufacture.

Impacts. An assessment of the meaning of changes in all attributes being studied for a given resource; an aggregation of all the adverse effects, usually measured using a qualitative and nominally subjective technique.

Integrated Air Wing Training. Squadrons brought together to train as a team.

Long-term. Impacts that would occur over an extended period, whether they start during the construction or operations phase. Most impacts from the operations phase are expected to be long-term since program operations essentially represent a steady-state condition (i.e., impacts resulting from actions that occur repeatedly over a long period). However, long-term impacts also could be caused by construction activities if a resource is destroyed or irreparably damaged or if the recovery rate of the resource is very slow.

Midden. A deposit marking a former habitation site and containing such materials as discarded artifacts, bone and shell, food refuse, charcoal, ash, rock, human remains, structural remnants, and other cultural leavings.

Migratory Bird Treaty Act, 16 U.S.C. §703 *et seq.* Prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.

Military Operations Area (MOA). Used for military training activities that do not involve the release of ordnance, such as in-flight rendezvous during training missions, air combat maneuvers, air intercepts, aerobatics, and en route transiting to training ranges. MOAs extend from 100 to 500 feet above ground level up to 18,000 feet MSL. Civil aircraft can use all the airspace in MOAs anytime, including when they are being used by the military.

Military Training Route (MTR). Corridors of airspace that lead to and from and pass through the Fallon Range Training Complex airspace. MTRs are usually established below 10,000 feet MSL for low altitude navigation and terrain-following training at speeds in excess of 250 knots.

Millingstone. An amorphous or roughly shaped stone slab on which seeds and other plant products are ground with the aid of a mano. The milling basin of the slab may be ovoid to round, depending on the elliptical or rotary motion of the handstone.

Mitigation. A method or action to reduce or eliminate program impacts.

Mobile Acquisition Radar. Electronic warfare systems that simulate radar used to detect aircraft at long range and to determine their altitudes.

Mobile Shooter Radar. Electronic warfare systems that simulate the movement of hostile radar systems, such as surface-to-air missiles and anti-aircraft artillery.

Mortar. (1). A stone or wooden bowl-like artifact in which seeds, berries, meat, and other products are ground or pulverized with a pestle. Mortars are found in bedrock outcrops and as portable items. (2). A type of explosive ordnance.

National Environmental Policy Act (NEPA), 42 U.S.C. §4321 *et seq.* Public Law 91-190, passed by Congress in 1969, established a national policy designed to encourage consideration of the influence

of human activities on the natural environment. NEPA also established the Council on Environmental Quality. NEPA procedures require that environmental information be made available to the public before decisions are made.

National Historic Preservation Act (NHPA), 16 U.S.C. §470 *et seq.* Protects cultural resources. Section 106 of the act requires a federal agency to take into account the potential effect of a proposed action on properties listed on or eligible for listing on the National Register of Historic Places.

National Register Resources. Properties listed on the National Register of Historic Places, properties formally determined eligible for listing on the National Register, and those properties appearing to qualify for listing on the National Register.

Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. §3001 *et seq.* NAGPRA defines the ownership and control of Native American human remains and associated funerary objects discovered or recovered from federal or tribal land.

Native Americans. Used in the collective sense to refer to individuals, bands, or tribes who trace their ancestry to indigenous populations of North America prior to Euro-American contact.

Native Vegetation. Plant life that occurs naturally in an area without agricultural or cultivational efforts. It does not include species that have been introduced from other geographical areas and have become naturalized.

Nonnative species. Species that have invaded or been introduced into an area.

Notice of Availability (NOA). Published in the Federal Register, it states that a NEPA document has been released for public review.

Notice of Intent (NOI). The first formal step in the EIS preparation process. Published in the Federal Register, it declares a federal agency's intent to prepare a NEPA document and signifies the start of the public scoping period.

Notice to Airmen (NOTAM). A national system used to disseminate advisory information to all pilots regarding flight hazards and conditions.

Ordnance. Artillery, including all military weapons and ammunition.

Permit. An authorization, license, or equivalent control document to implement the requirements of an environmental regulation.

Pestle. An elongate, often cylindrical stone or wooden artifact used to pulverize food products and other substances in a mortar.

Phase. A distinctive archeological unit representing a fairly brief interval of time within a locality or region. A phase may be a single component at 1 side or a prolonged occupation of numerous related sites (Wiley and Phillips 1958).

Podded Aircraft. Aircraft outfitted with tracking instrumentation.

Prehistoric. The period before written records.

Prehistory. The archaeological record of nonliterate cultures; the cultural past before the advent of written records.

Range Air Surveillance System (RASS). Provides radar tracking of aircraft within a 60-mile radius of the site. Each RASS site is equipped with an interrogator that collects location and altitude data from aircraft equipped with transponders. The tracking data is used to monitor civilian and military air traffic.

Record of Decision (ROD). The document prepared under the federal government that documents the reasoning behind a decision.

Restricted Area Airspace. Located above and around the boundaries of the training ranges. It extends from the ground to 18,000 feet above mean sea level. Restricted area airspace is used for hazardous military activities, such as artillery and missile firing and air-to-ground gunnery and bombing, that are conducted on the training ranges. Civil aircraft can fly in restricted areas when they are not being used for military training activities.

Runoff. The noninfiltrating water entering a stream or other conveyance channel shortly after it rains.

Seismicity. Relative frequency and distribution of earthquakes.

Short-term. Transitory effects of the proposed program that are of limited duration and that generally are caused by construction activities or operations startup.

Significance. The importance of a given impact on a specific resource, as defined under the Council on Environmental Quality regulations.

Soil. A natural body consisting of layers or horizons of mineral and/or organic constituents of variable thickness and differing from the parent material in its morphological, physical, chemical, and mineralogical properties and biological characteristics.

Soil Types. A category or detailed mapping unit used for soil surveys based on phases or changes within a series (e.g. slope, salinity).

State Historic Preservation Officer (SHPO). The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the National Historic Preservation Act.

Surface Water. All water naturally open to the atmosphere and all wells, springs, or other collectors that are directly influenced by surface water.

Tactical Air Compact Training System (TACTS). System that enables aircraft to be tracked and recorded. Aircraft are fitted with pods that transmit a signal. The signal is detected by ground-based receivers, and the aircraft's position can be determined by triangulating the data from three remote tracking instrumentation subsystem remote sites that receive the signal. These sites transmit the data back to a master site.

Threatened Species. Plant and wildlife species likely to become endangered in the foreseeable future.

Toxic. Harmful to living organisms.

Tracking Instrumentation Subsytem (TIS). A component of TACTS that receives signals emitted from an aircraft fitted with a transmitting signal.

Typewing Weapon School. Offers a structured syllabus administered by each typewing to standardize squadron unit level training. At the completion of unit level and typewing training, aircrews are familiar with their aircraft, aircraft weapons and weapon systems, and single aircraft, section, and division tactics.

Unit Level Training. The day-to-day training performed in a deployed squadron. It emphasizes single aircraft, section (two aircraft), and division (four aircraft) events. Unit level training achieves initial basic qualifications for new aircrew and maintains proficiency for aircrews that are already qualified.

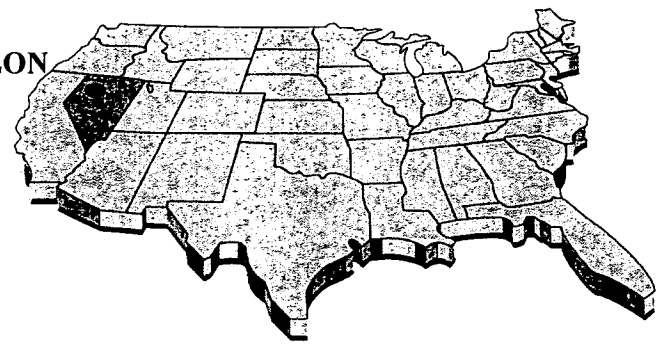
US Environmental Protection Agency. The independent federal agency established in 1970 to regulate federal environmental matters and to oversee the implementation of federal environmental laws.

Visual Cueing Device. A piece of equipment placed on the ground to train aircrews to sight and recognize ground threats. Active visual cueing devices primarily consist of the Smoky SAM, which simulates the initial boost phase of a surface-to-air missile. Passive visual cueing devices consist of mock mobile launch vehicles, tanks, personnel carriers, and replicated or actual foreign mobile (vehicular) weapon systems.

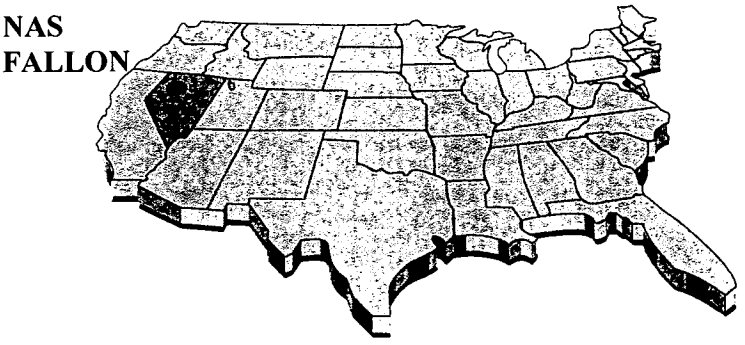
Wetlands. Areas that are inundated or saturated with surface water or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil. This classification includes swamps, marshes, bogs, and similar areas. Jurisdictional wetlands are those wetlands that meet the vegetation, soils, and hydrology criteria under normal circumstances (or meet the special circumstances as described in the US Army Corps of Engineers, 1987 wetland delineation manual where one or more of these criteria may be absent) and are a subset of "waters of the United States."

Wildlife Refuge. An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

NAS
FALLON



APPENDICES



APPENDIX A

NAS FALLON LANDHOLDINGS

APPENDIX A
NAS FALLON LANDHOLDINGS

Appendix A includes a summary of NAS Fallon acquired lands, withdrawn lands, and rights-of-way.

Table A-1
Lands Currently Administered by NAS Fallon

Location	Total Acreage	Acquired Land	Withdrawn Land
NAS Fallon	7,872	3,945	3,927
B-16	27,680	0	27,680
B-17	54,800	0	54,800
B-19	29,532	0	29,532
B-20	41,006	19,430	21,576
Dixie Valley	78,341	9,741	68,600
Shoal Site	2,765	0	2,765
TOTAL	**241,996**	**33,116**	**208,880**

Source: US Navy 1999a

Table A-2
Former and Existing Withdrawn Lands Supported by NAS Fallon

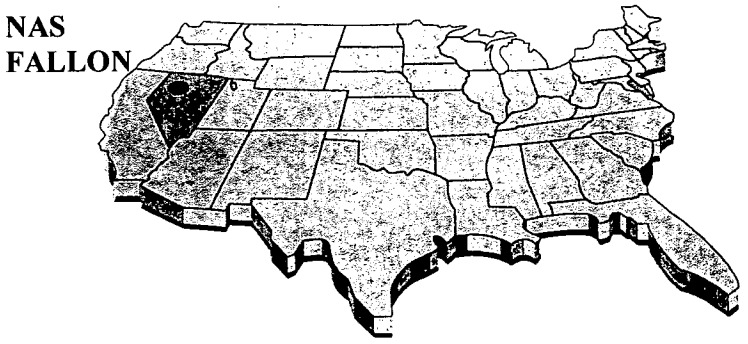
PLO/PL Number	Enactment Date	Withdrawn Acreage	Location of Withdrawal	Original Term[1]	New Term[6]
PLO 275	April 23, 1945	160	NAS Fallon	In perpetuity	20 years
PLO 788	January 10, 1952	2,400	NAS Fallon	Indefinite	20 years
PLO 898	June 12, 1953	17,280	B-16	Indefinite	20 years
		21,400	B-17	Indefinite	20 years
		17,332	B-19	Indefinite	20 years
PLO 1632	May 1958	272,000	Black Rock Range	5 years[2]	--
		519,000	Sahwave Range	5 years[3]	--
PLO 2635	March 20, 1962	967	NAS Fallon	Indefinite	20 years
PLO 6300[4]	July 22, 1982	None	B-17	Indefinite	20 years
PLO 6834	February 11, 1991	400	NAS Fallon	20 years	20 years
PL 99-606	November 6, 1986	21,576	B-20	15 years	20 years
Range Safety and Training Public Land Withdrawal[5]	October 4, 1999	127,365	Around B-16, B-17, and B-19, shoal site, and the Dixie Valley area	--	20 years

Source: US Navy 1999a

[1]"Indefinite" was defined as the term ending only when the lands are "no longer needed by the Department of the Navy for the purpose for which they are reserved, such as military training and support." If terminated, the withdrawn lands would return to BLM or Bureau of Reclamation jurisdiction.
[2]Relinquished in 1965.
[3]Relinquished in 1967.
[4]Amends PLO 898 by redefining the legal description of B-17. No acreage change.
[5]The Range Safety and Training Public Land Withdrawal withdrew an additional 10,400 acres around B-16, 33,400 acres around B-17, 12,200 acres around B-19, 68,600 acres in the Dixie Valley area, and 2,765 acres at the shoal site.
[6]The legislation signed for the Range Safety and Training Public Land Withdrawal placed a 20-year term on all withdrawn lands at NAS Fallon effective October 4, 1999, except for B-20. The 20-year term for the B-20 training range begins upon expiration of the withdrawal under PL 99-606 (November 6, 2001).

Table A-3
Existing Rights-of-way

Site	Site Acreage	Road Acreage	Power Line Acreage	Total Acreage
RASS Sites	1.956	5.7	23.27	30.926
EW Sites	115.393	256.761	132.267	503.667
TACTS/TIS Sites	0.192	--	30.90	31.092
TOTAL	**117.541**	**262.461**	**186.437**	**565.685**



APPENDIX B

IDA REPORT EXECUTIVE SUMMARY

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Navy training requirements and the changes proposed by the Naval Strike and Air Warfare Center to meet training requirements actions are discussed in detail in the FRTC Requirements Document (US Navy 1999e). These training requirements have undergone independent validation by the Institute for Defense Analysis (IDA), performed under contract to the BLM (IDA 1999). The executive summary of the IDA Report is included as this appendix; the complete report is available at the BLM Carson City and Battle Mountain Field Offices.

EXECUTIVE SUMMARY

The Navy has proposed expanding its aviation training facilities near Fallon, Nevada, by withdrawing additional public land and installing actual and simulated threat radar systems in the eastern portion of the Fallon range. The Nevada State Office of the Bureau of Land Management asked IDA to review the Navy's *Requirements Document for the Fallon Range Training Complex* and provide information to assist in developing alternatives for analysis in the required Environmental Impact Statement. The principal findings and recommendations from that review are presented here.

Effective aviation training requires substantial airspace and sufficient land to accommodate simulated threats and targets. Navy aircrews must be prepared to operate on the modern battlefield with its wide variety of targets and often complex air defenses. In many instances targets and threats will be encountered unexpectedly. Flight operations are essential to prepare aircrews to function effectively in this environment. Simulators and other ground-based training cannot replicate the stresses imposed by modern combat. Typical Navy flight operations involve several types of aircraft, each assigned an essential task so that the mission can be conducted successfully. Realistic training must reflect this characteristic while presenting aircrews with the types of targets and threats expected during wartime. As such, aviation training for a carrier air wing requires a large volume of airspace to accommodate the numbers of aircraft involved and sufficient land space to accommodate simulated targets and threats. Range instrumentation is needed throughout the training complex to record aircraft maneuvers and enable re-creation of training situations for detailed study and review.

Use of other Navy or Air Force ranges to conduct the training now accomplished at Fallon would be impractical. Use of other Navy ranges for carrier air wing training is infeasible owing to the limited air and land space available at other ranges. With few exceptions, a large portion of the airspace at the Navy's other ranges is over water and thus poorly suited for training aircraft to strike targets ashore. Moreover, the Navy's other ranges are all located in more densely populated areas, and must contend with a larger volume of commercial air traffic. Navy use of nearby Air Force ranges (e.g., Nellis, Mountain Home, or the Utah Test and Training Range) is infeasible owing to the Navy's large sortie requirement and the distances that would need to be flown to reach

these ranges. The large number of sorties associated with carrier air wing training could not be absorbed easily at nearby Air Force ranges, which are also heavily used. Even if space were available at the western Air Force ranges, the travel time between Fallon and even the closest of these facilities would reduce available training time and increase training costs. Moving the training conducted at Fallon to an entirely new location would impose substantial costs and raise environmental concerns at least as severe as those at Fallon.

The existing collection of threat radar systems at Fallon no longer provides a realistic training environment for the spectrum of potential adversaries that could confront naval aviators. The principal shortcoming of the existing threat array is the lack of advanced air defense systems that are now being exported to nations potentially hostile to the United States. In addition, all of the threat radars now used at Fallon are located in Dixie Valley and lie within 25 miles of the B-17 target complex. (The location of the existing threat array is shown in Figure I, as are the proposed locations for new radar sites on both Navy and public land. The figure also shows the airspace boundary, which would remain essentially unchanged.) For aircraft flying typical attack profiles, the surrounding mountains mask the incoming aircraft from ground-based threat radars until the aircraft are almost over the valley. This level of threat coverage is representative of only about 10 percent of the targets in typical conflict scenarios.

The threat array proposed by the Navy will facilitate more realistic training for the spectrum of potential adversaries. The proposed array includes advanced threat systems developed by Russia and China as well as U.S. and European systems that have been exported. The Navy plans to use some of these new systems from fixed and mobile sites in the eastern portion of the Fallon range.[1] These locations will enable Navy instructors to devise more realistic training scenarios. With threats located as far as 75 miles from existing target areas, aircrews would be forced to fly through defended airspace for distances of up to 100 miles – a level of coverage representative of roughly 50 percent of targets in typical conflict scenarios. While successful installation of the proposed threat array will provide an acceptable training capability against threats now in existence, over the longer term, the Navy will need to reassess its training requirements

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[1] The fixed sites would occupy roughly 5 acres and would include one or more radars along with maintenance and storage facilities, communications equipment, and an electrical generator. Mobile radar systems would be operated from one-eighth acre turnouts off existing roads. The radar and its supporting communications system and electrical generator would be transported to the site by semi-trailer. Navy plans call for the installation of 2-4 fixed sites and 15-18 mobile sites on public land.

PCL XL error

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